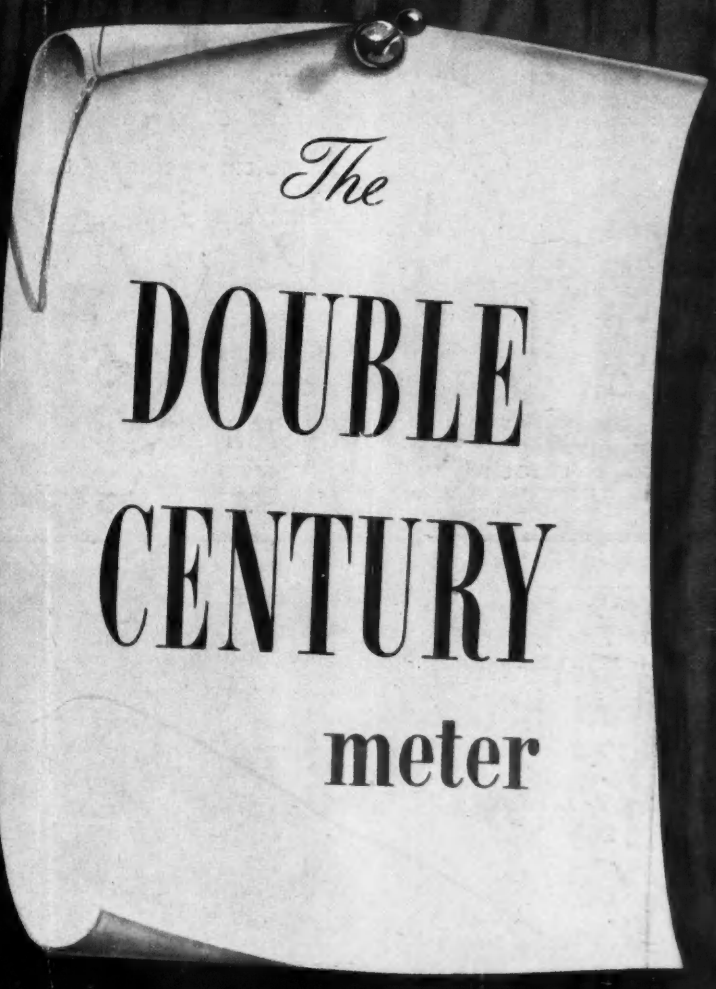
Gas Journal

[illegible] 17th Year LONDON, SEPTEMBER 24, 1952 No. [illegible] Price 1/3

Registered as a Newspaper



PARKINSON & COWAN (GAS METERS) LIMITED
Terminal House. Grosvenor Gardens. S.W.1.

PLAN *for* EFFICIENCY

Conveyors and Mechanical Handling Plant cut time and labour costs, thereby providing the extra impetus needed for increased productivity. There is no problem in this field to which we cannot supply the answer.

WITH THOMPSON CONVEYORS

JOHN THOMPSON CONVEYOR CO.

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DONKIN

GAS COMPRESSORS

- HIGH SPEED VERTICAL RECIPROCATING TYPE
- AUTOMATIC CONTROL FORCED LUBRICATION
- EASY ACCESSIBILITY TO WORKING PARTS
- PERFECT BALANCE
- CAN BE SUPPLIED DRIVEN BY STEAM, GAS ENGINE OR ELECTRIC MOTOR

The BRYAN DONKIN CO LTD · Chesterfield

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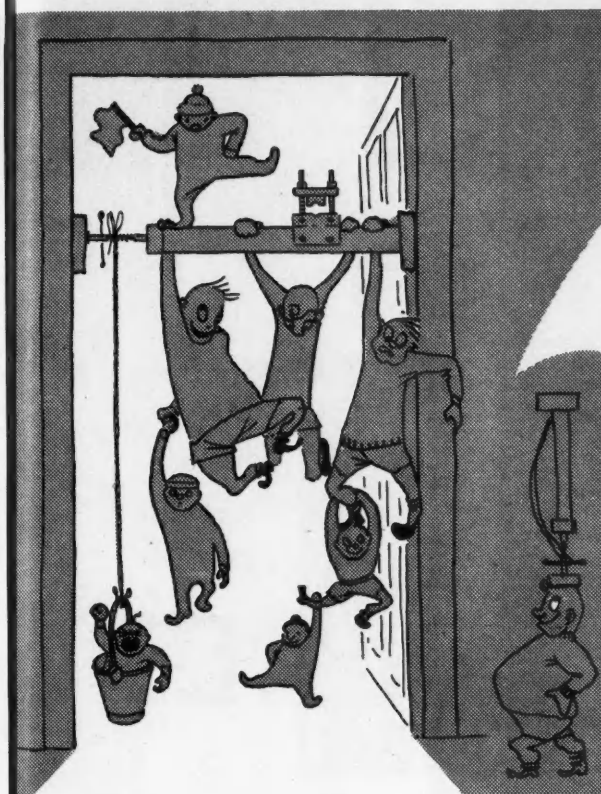
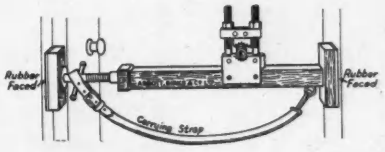


Child's play

Simplicity itself, the Hopper's Portable Doorway Tube Vice gives great strength and rigidity. Easily carried by the cyclist-fitter, and ideal for all pipework up to ¾ in. or more. Thousands have been in regular use during the past fifteen years—and never a complaint of damage to paint or doorways.



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Abbirko House, 90-91, Blackfriars Road, London, S.E.1.
Telephone: WATerloo 4066.

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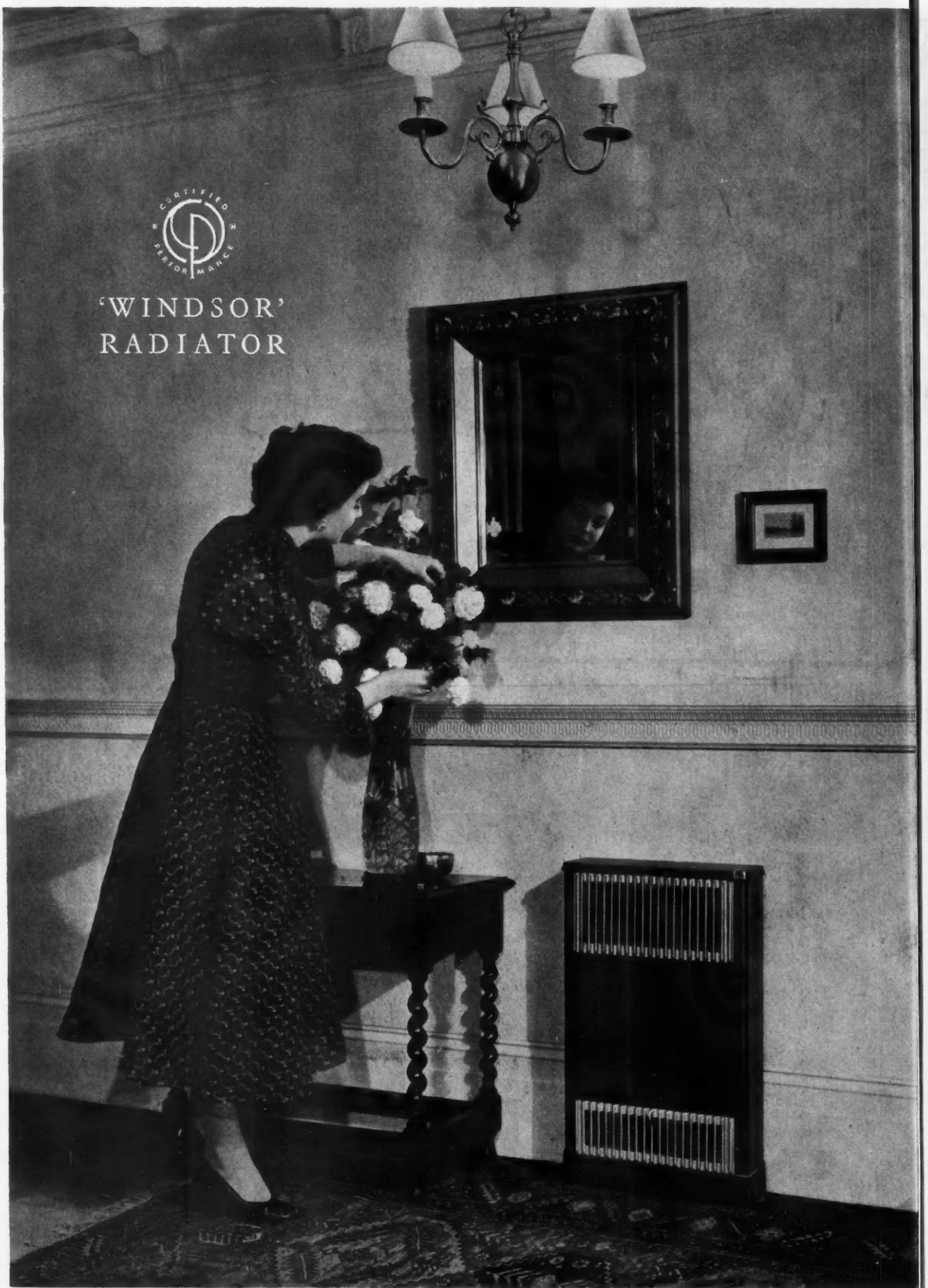

COWPER PENFOLD & COMPANY LIMITED · 6 BASIL STREET · KNIGHTSBRIDGE · S·W·3

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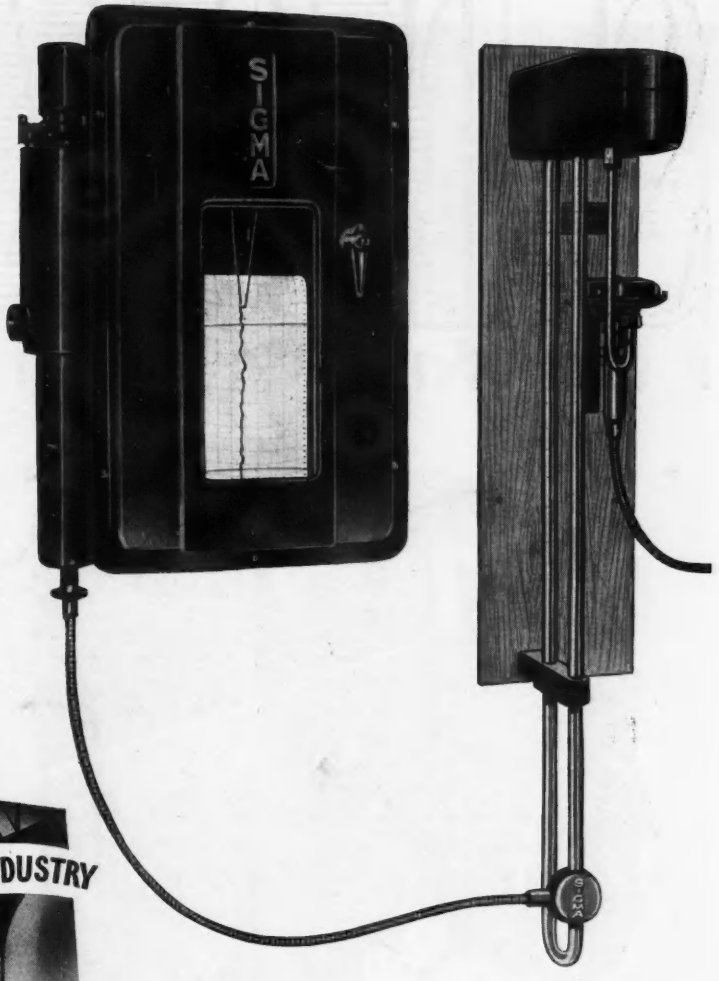
SIGMA

Recording Calorimeter

MK. II



Will record calorific value of ANY gas which will burn up to 2,000 B.Th.U's.
Not affected by normal changes in temperature and pressure.
Rapid response to changes in C.V.
Can be fitted with transmitter for distant indicator or recorder and for automatic control systems.
All parts heavily protected against corrosion.

Old Type Calorimeters still available for early delivery.

SIGMA INSTRUMENT COMPANY · LIMITED

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FOR THE GAS INDUSTRY

HARDMAN & HOLDEN LIMITED

INCORPORATING MANCHESTER OXIDE CO LTD

MANOX HOUSE · MILES PLATTING · MANCHESTER · 10

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HUWOOD CONVEYORS

reduce coke storing charges

Illustration shows Huwood Top-Belt Conveyor stacking coke at the Howdon Works of the Northern Gas Board.

Huwood Conveyors can be designed to suit any individual requirements

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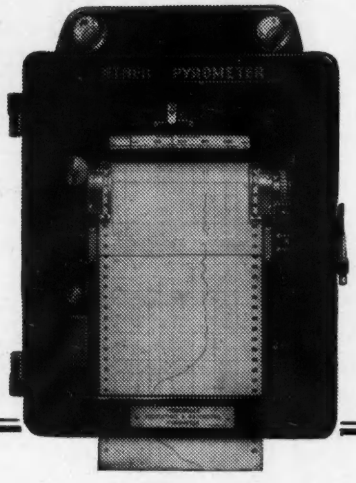
ETHER
AUTOMATIC
TEMPERATURE CONTROLLER
Mechanically and Electronically Operat



Ether-Wheelco "Capacitrol" E.W.221.

This instrument utilises electronic action to achieve rapid and accurate control of furnace temperature. Supplied for On, Off, High, Low and Proportional Control.

Ether "Indicorder" Type C.R.M.S.

Indicate, Record and Control Gas Furnace Temperatures automatically. Made for Wall or Panel Mounting. Send for List No. 645.

Pass your automatic temperature probl to us — We design and manufacture a range of instruments and Valves and can vise the most suitable apparatus to m your requirements.

We also manufacture, under the Amer Wheelco Co. Patents, a range of Et Wheelco Electronic Controls which, w supplemented by our normal Ether rang Instruments, cover every Automatic Te erature Control requirement.

Our technical advisory service is alway your service.

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J.H.C ALUMINIUM SERVICE GOVERNORS

JEAVONS

★ Incorporating the latest improvements in Governor Technique.
★ Designed for moderate gas loads— for larger capacities specify J.46.
★ Compensated against inlet pressure fluctuations.
★ Immediate delivery.

Details and samples on application.

JEAVONS ENGINEERING CO.

TIPTON · STAFFS · (PROPS: E. E. JEAVONS & Co. Ltd) · 'Phone: TIPTON 2161 'Grams: 'PIPELINES' TIPTO

THE RAYMOND HAS A WAY WITH WOMEN

and full-page advertisements are now inviting them to your showrooms to meet this most luxurious and efficient gas cooker, selling at 61½ guineas

INTRODUCE YOUR CUSTOMERS TO THE MANY VIRTUES OF THE RAYMOND

- ★ A most attractive appearance
- ★ Concealed plate rack
- ★ Larger hotplate
- ★ Interchangeable hotplate parts
- ★ Safety type taps
- ★ Taps turn with exceptional smoothness for flame control
- ★ All burners light automatically
- ★ Safety device for automatic oven-lighting
- ★ Easily accessible, standard-type battery for lighting
- ★ Enclosed grill chamber
- ★ Larger grill
- ★ Larger oven
- ★ Thermostatic control of oven heat
- ★ Grill pan can be used in the oven
- ★ Oven shelves cannot tip or pull out accidentally
- ★ All oven linings are removable
- ★ Stands flush against the wall
- ★ Oven ventilation in front of splash plate
- ★ Stainless vitreous-enamel finish throughout
- ★ All metal parts are stainless and rustproof

In all these leading publications full-page advertisements are appearing to the end of the year: Punch, Good Housekeeping, Sphere, Illustrated London News, House & Garden, Homes & Gardens, Ideal Home, Woman's Journal.

THE RAYMOND GAS COOKER IS A PRODUCT OF GENERAL GAS APPLIANCES LTD., AUDENSHAW, MANCHESTER

Proprietors: Allied Ironfounders Ltd.

C.O.L

Fifth Conference of the International Gas Union Brussels 1952

U.C.B. COKE OVENS

Numerous Gas and Coke Oven Engineers will have seen examples of U.C.B. Coke Oven Batteries (Tertre, Ville de Bruxelles, Marly) on the occasion of their Conference and will have appreciated their excellence and durability.

We invite those interested in this design of oven to get in touch with the Sole Licensees—

GAS CHAMBERS & COKE OVENS LTD.

Engineers and Contractors

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Telephone: ABBEY 6912

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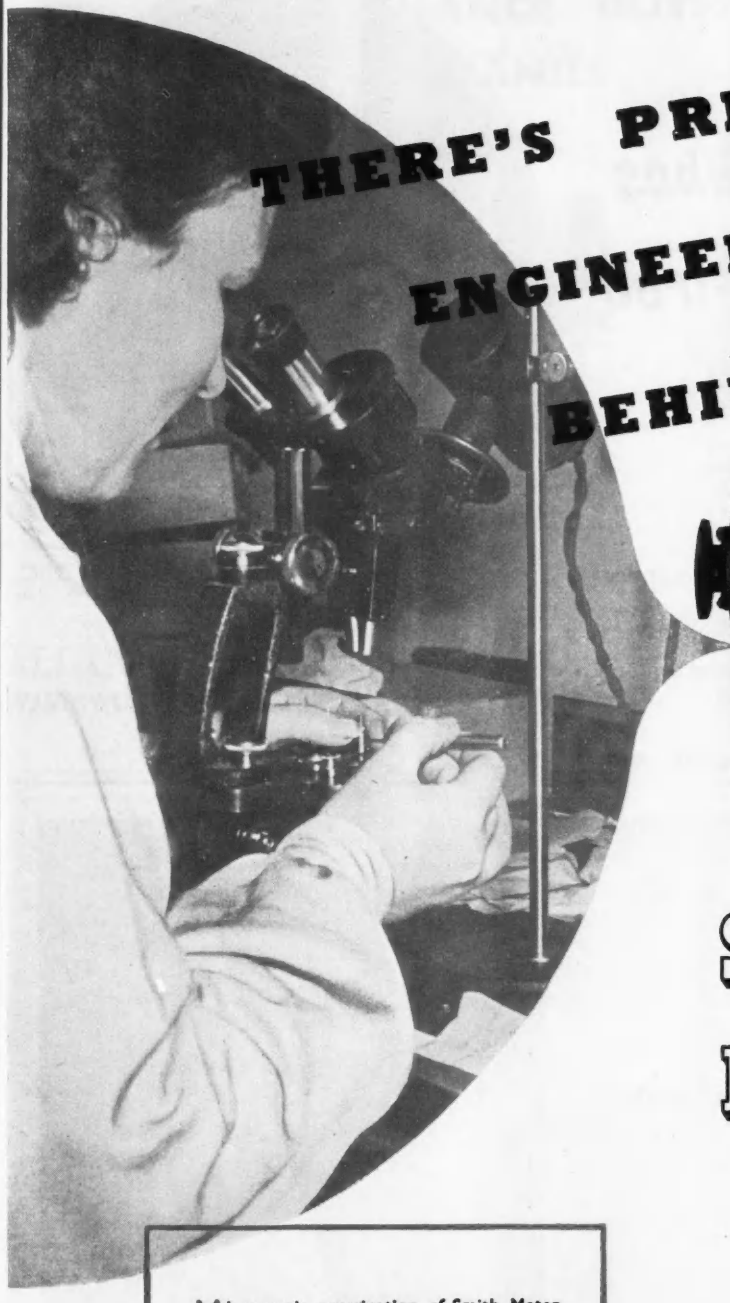
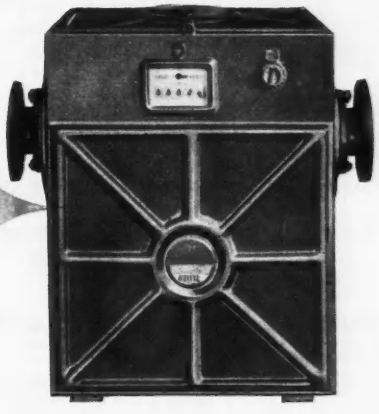


THERE'S PRECISION ENGINEERING BEHIND THE



SMITH METER

DOMESTIC
and
INDUSTRIAL

Microscopic examination of Smith Meter parts is the job of one section in the Testing Department. Such thoroughness and precision goes into the building of Smith Meters.

SMITH METERS

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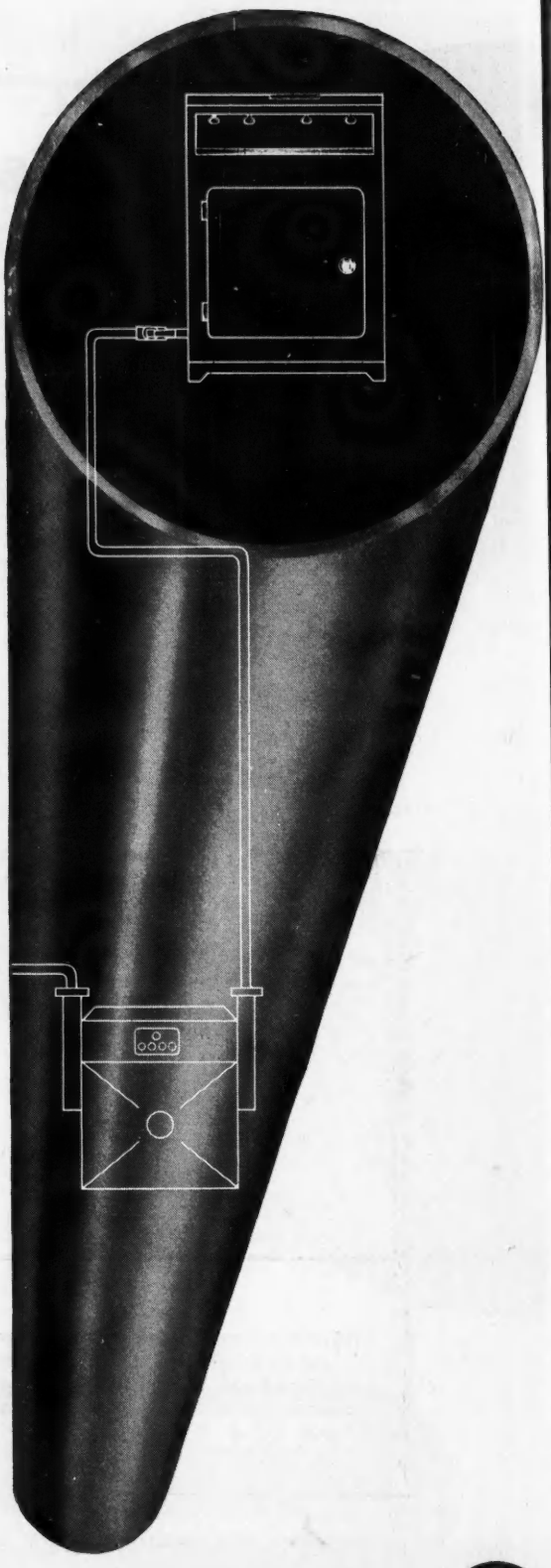
Works: Kennington, S.E.11 and Streatham Vale, S.W.16. Northern Sales office: 3-4, East Parade, Leeds, 1. Phone: 23726.

I.C.I. Copper tubes ensure trouble-free Gas Systems



For domestic gas systems, light gauge copper tubes made by the Metals Division of I.C.I. have five obvious advantages. They are:—

1 **Economical, both in laying costs and maintenance.**

2 **Not attacked by normal town gas.**

3 **Easily manipulated and installed.**

4 **Strong in relation to their light weight.**

5 **Neat in appearance.**

Whatever the building—farmhouse or factory; house, hotel or hospital—the job is better done with I.C.I. copper tubes.

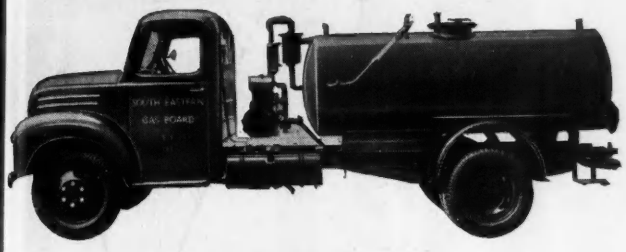
IMPERIAL CHEMICAL INDUSTRIES LTD LONDON SW1

Fittings for copper tubes are made by Fyffe & Co. Ltd., Dundee, a subsidiary company of I.C.I.

M.204

ALLAN TAYLOR

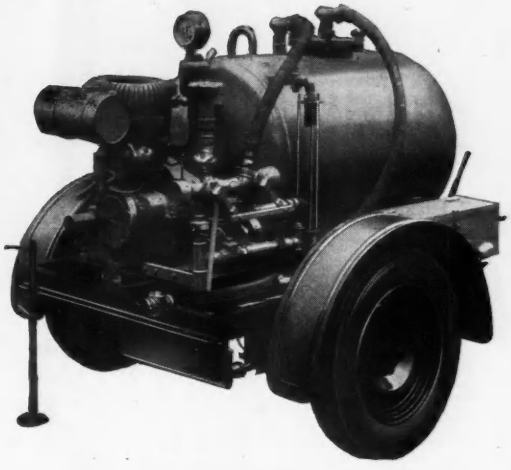
MAINTENANCE OUTFITS FOR GAS COMPANIES



SYPHON EMPTYING OUTFIT

The vacuum syphon emptying outfit illustrated is mounted on a 4-ton Fordson chassis. A 600 gallon galvanised tank is fitted. A rotary type exhauster is driven by a 4 b.h.p. four-stroke air cooled engine, mounted on a sub-frame behind the cab. The tank is fitted with a flame-proof vent and the outfit can be used for high or low pressure syphon emptying. A large manhole at the rear allows the tank to be cleaned easily.

A sight glass is fitted to enable the operator to know when the syphon is emptied. Twenty-five feet of 1½ in. suction hose is supplied with the outfit. The outfit can be used for vacuum or pressure working.



SERVICE PIPE CLEARING OUTFIT

Trailer model fitted with 75 gallon galvanised tank and a 3 b.h.p. engine driving an exhauster. Vacuum or pressure can be obtained by moving a single lever. Safety valves are employed and come into operation when pressure in the tank reaches 8-10 lbs. The tank is tested to 30 lbs. A 27 in. vacuum is obtained in 2 minutes.

The outfit can also be used for emptying syphons and an automatic liquor valve is fitted to prevent the liquor reaching the exhauster. In addition to the vacuum and pressure gauge a sight gauge is fitted to enable the operator to see at a glance the exact amount of contents in the tank. Sixty feet of 1 in. hose and necessary couplings supplied with each outfit.

Full particulars and illustrated pamphlet sent on request

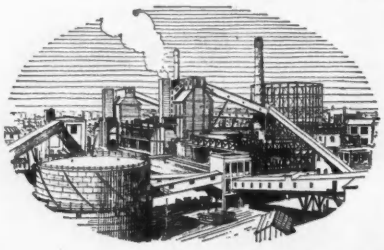
ALLAN TAYLOR (Engineers) LTD.

WANDSWORTH HIGH STREET, LONDON, S.W.18

Telephone : VANdyke 4433 (Five lines)

MILNE'S METERS LTD, EDINBURGH & LEEDS

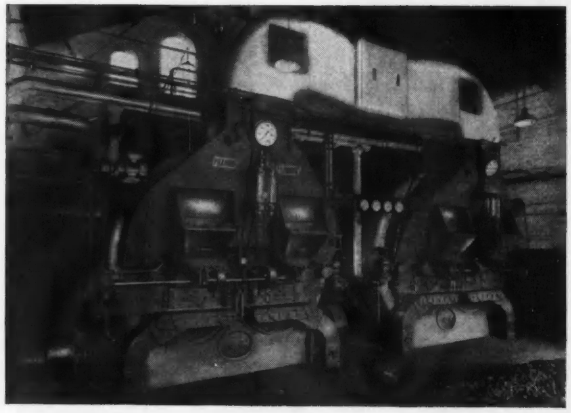
PAXMANS IN THE GAS INDUSTRY



Getting the Best out of Breeze

It is well-known that coke breeze as a by-product of the Gas Industry presents a problem in respect of its efficient disposal. Potential heat and steam raising qualities are available but as every Combustion Engineer knows there are difficulties associated with the burning of coke breeze. We have specially designed Economic Boilers to meet these peculiar conditions and our claim to raise steam from coke breeze with the maximum of efficiency combined with low carry-over is undisputed.

The illustration shows an Economic Boiler burning 100% coke breeze at the Reading Gas Works. This is only one of many such installations in the Gas Industry. If you have a coke breeze problem let us examine it and present our proposals.



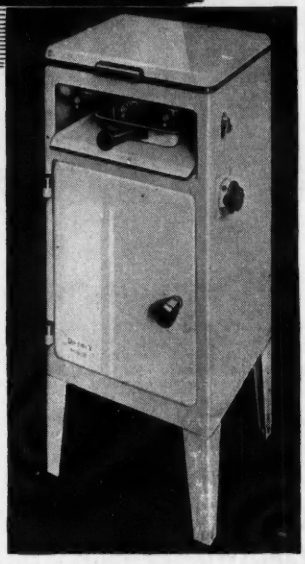
DAVEY, PAXMAN & CO. LTD.
COLCHESTER

Telephone: Colchester 5151/7. Telegrams: Paxman, Colchester

B.29

A GREAT SUCCESS IN

Small kitchens and flats



The **Dainty** MINOR

This efficient little cooker of large capacity is made especially for small kitchens and flats.

Its cast iron construction ensures durability and low maintenance cost.

For hire purchase or for simple hire the Dainty Minor is ideal.

Approved and adopted by leading gas boards.

R. RUSSELL & SONS LTD., DERBY

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JAMES R. THOMSON & CO. LTD, 41, York Street, Glasgow C.2

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DIAL THERMOMETERS, CONTROLLERS and RECORDERS

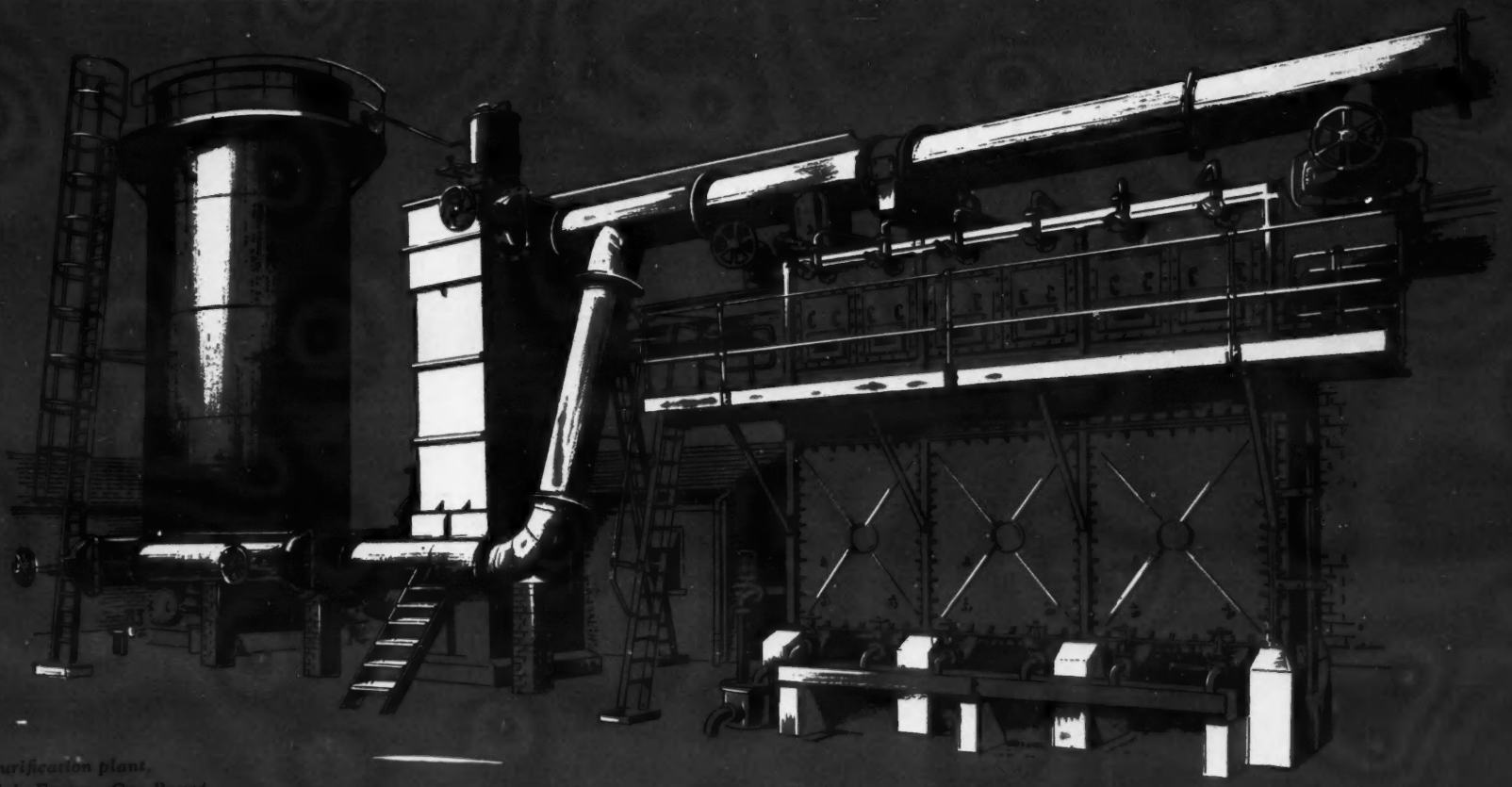
The clear dial, robust construction and reliability of the Rototherm thermometer has made it the accepted instrument for all temperature indication. Thermometers, Controllers and Recorders are available to suit all industrial and domestic heating and cooking installations. Full details upon request.

'Specialists in all bi-metallic applications.'

Rototherm
DIAL THERMOMETERS

THE BRITISH ROTOTHERM CO., LTD.
Merton Abbey, London, S.W.19. LIBerty 7661.

COMPLETE GASWORKS PLANTS

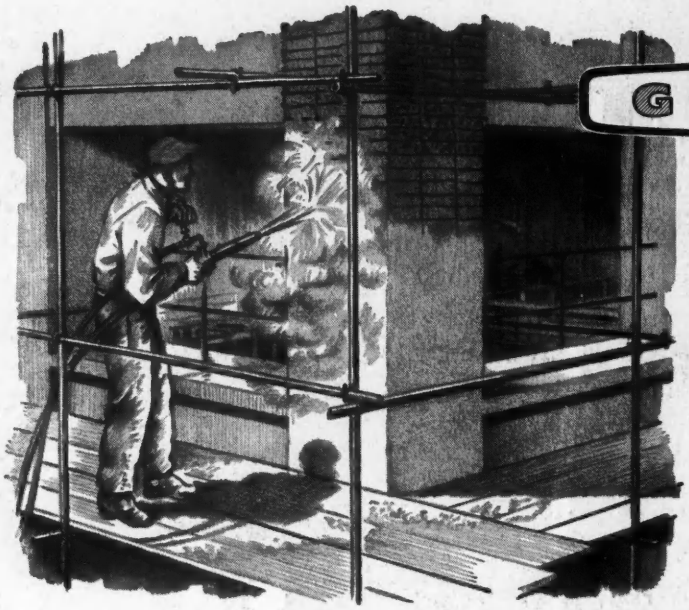


Wet purification plant, Norwich, Eastern Gas Board.

by Simon-Carves Ltd

SIMON ENGINEERING GROUP

STOCKPORT, ENGLAND



GUNITE

The successful way to recondition defective concrete structures, encase structural steelwork, and line tunnels and water reservoirs. Developed and applied in all parts of the world with the resources, experience and skill of The Cementation Company, Ltd.

BY THE CEMENTATION Company Limited

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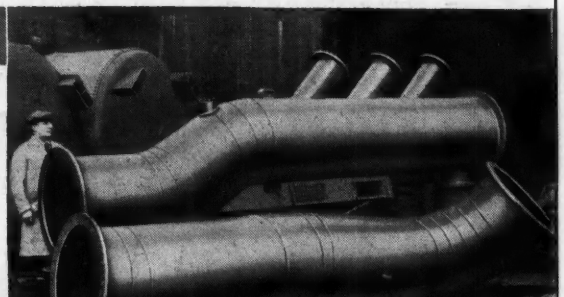
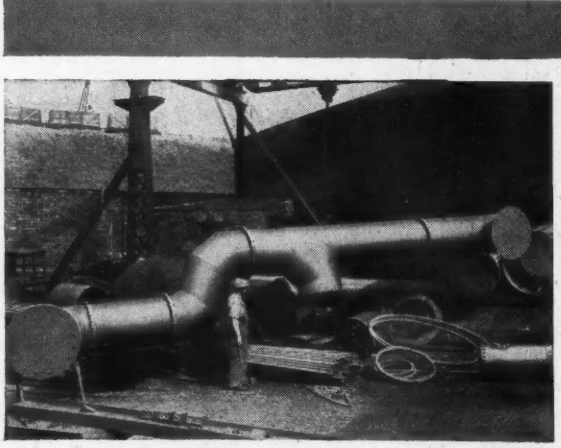
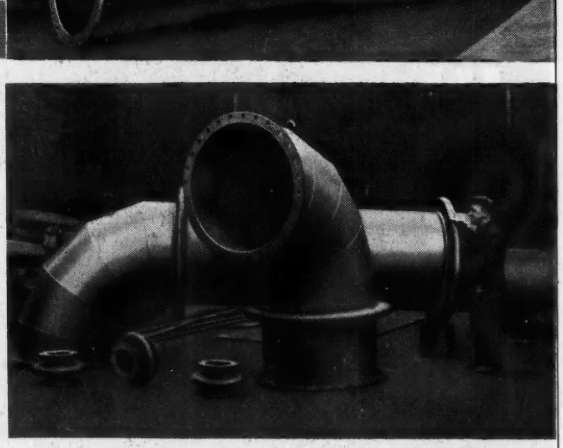
Manufacturers of Chemical Plant, Pressure Vessels, Tanks, Pipes, Heat Exchangers. Fabricated plate work welded or riveted.

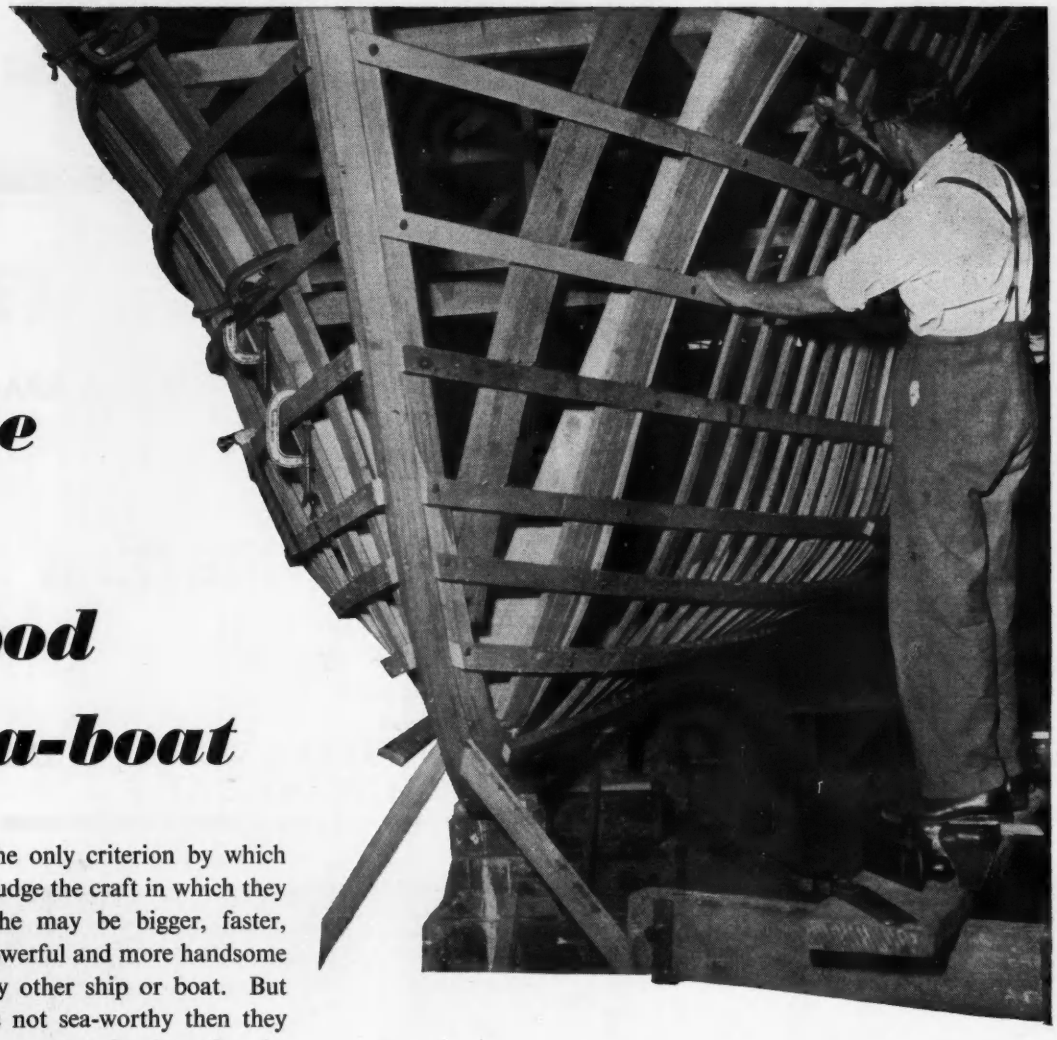






A. J. RILEY & SON LTD.
BOILER MAKERS
TELEPHONE: BATLEY 657 (3 LINES)

VICTORIA WORKS, BATLEY, YORKS
WELDING ENGINEERS
TELEGRAMS: 'BOILERS BATLEY'



Is she a good sea-boat

—the only criterion by which sailors judge the craft in which they sail. She may be bigger, faster, more powerful and more handsome than any other ship or boat. But if she is not sea-worthy then they will have no use for her—for she is dangerous.

To be sea-worthy, a vessel has to have several qualities. The design must be first class, the materials of which she is made must be sure and sound, and the craftsmanship that went into her building must be beyond reproach. The proof of these qualities is a ✠100 A1 Certificate from Lloyds.

Although there is no comparable certificate for 'Multitest' Gas Meter diaphragms, we do insist on the same searching tests. The leather, the tanning, and the craftsmanship all must be of the very highest order.

'Multitest' makes no headlines, indeed comparatively few know of our existence. But we are content so long as those few, inside and outside the trade, know that 'Multitest' stands for dependability, durability and accuracy.

Quality stands the test of time

THE METROPOLITAN LEATHER CO. LTD.

WELLINGTON WORKS, QUEEN STREET, GREAT HARWOOD, BLACKBURN, LANCS.

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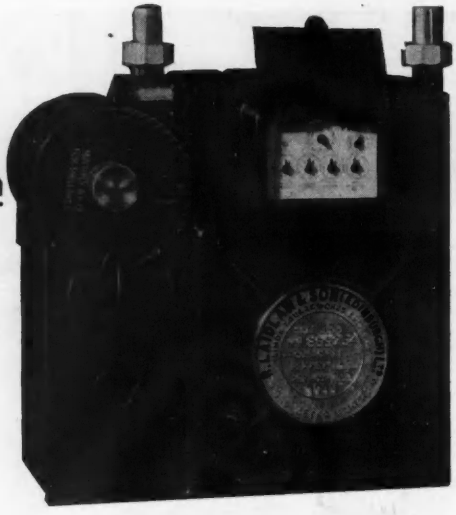


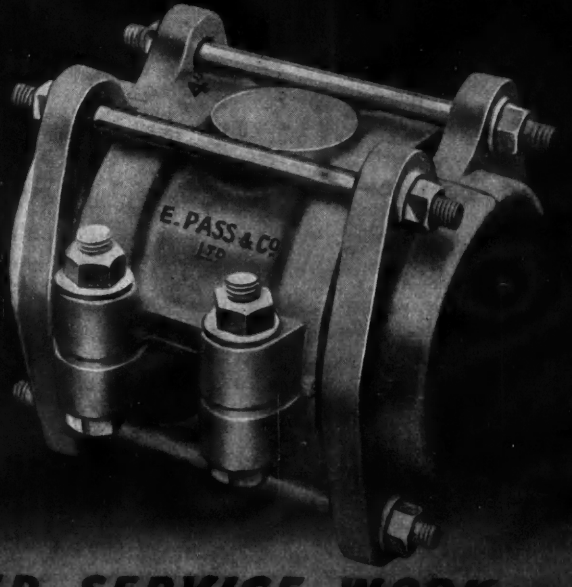
I.G.E. AND HIGH CAPACITY

SLOT AND ORDINARY METERS

Nothing But the Best Materials and Workmanship Used in Their Manufacture
Repairs—Parts Supplied

R. LAIDLAW & SON (Edin.) Ltd., SIMON SQUARE WORKS, EDINBURGH
8/9, LUDGATE SQUARE, LONDON, E.C.4

GLANDED SPLIT COLLARS



FOR REPAIR AND SERVICE WORK

TELEPHONE DENTON 3001/2/3

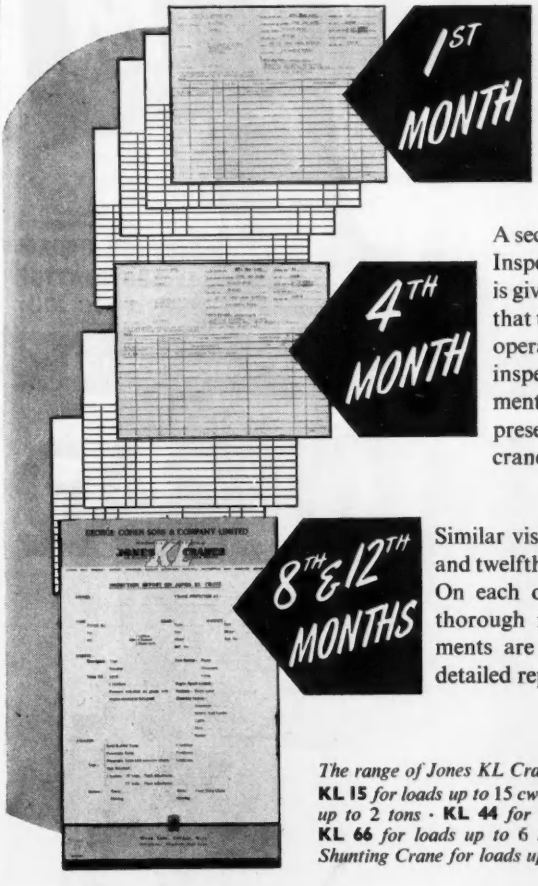
E. PASS & CO. LTD
GAS & WATER ENGINEERS DENTON LANCS.

TELEGRAMS TOOLS DENTON LANCS

JONES CRANES

are backed by this

FREE 'FOLLOW-THROUGH'



A Jones Cranes Service Inspector visits each new crane when it is delivered, to instruct the customer's driver how to operate and maintain it most efficiently. He stays as long as is necessary to ensure that the driver is absolutely competent.

A second visit is made by a Service Inspector to ensure that the crane is giving complete satisfaction, and that the driver fully understands its operation. The crane is thoroughly inspected, any required adjustments effected and a written report presented to the customer on the crane's condition and working.

Similar visits are made during the eighth and twelfth months from date of purchase. On each occasion, the crane is given a thorough inspection. Necessary adjustments are made there and then, and a detailed report presented to the customer.

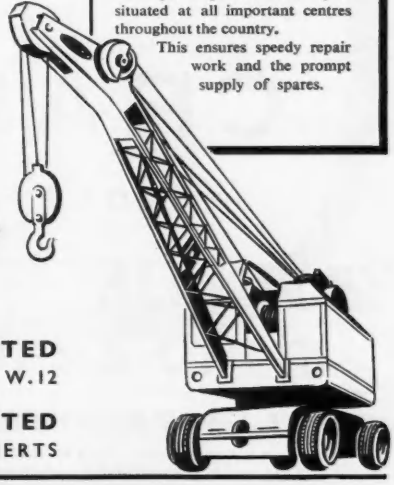
THE JONES CRANE SERVICE COMPRISES:

1 A free-of-charge series of visits by Jones Service Inspectors during the first twelve months to advise on the best use of the crane, to inspect its condition and to make, without charge, necessary adjustments.

2 An extension of these visits (after the expiry of the twelve month guarantee period) at a nominal charge, as and when required by the user. The Inspector makes written reports to the user, and by subscribing to this service, the user ensures that the efficiency of his crane is fully maintained.

3 A mobile breakdown service operating from Service Depots situated at all important centres throughout the country. This ensures speedy repair work and the prompt supply of spares.

The range of Jones KL Cranes includes: **KL 15** *for loads up to* 15 *cwt* · **KL 22** *for loads up to* 2 *tons* · **KL 44** *for loads up to* 4 *tons* **KL 66** *for loads up to* 6 *tons* · **KL 100** *Rail Shunting Crane for loads up to* 5 *tons.*



JONES KL CRANES *take the load!*

THE 600 GROUP OF COMPANIES

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Designed, Manufactured and Exported by their Associates:
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B

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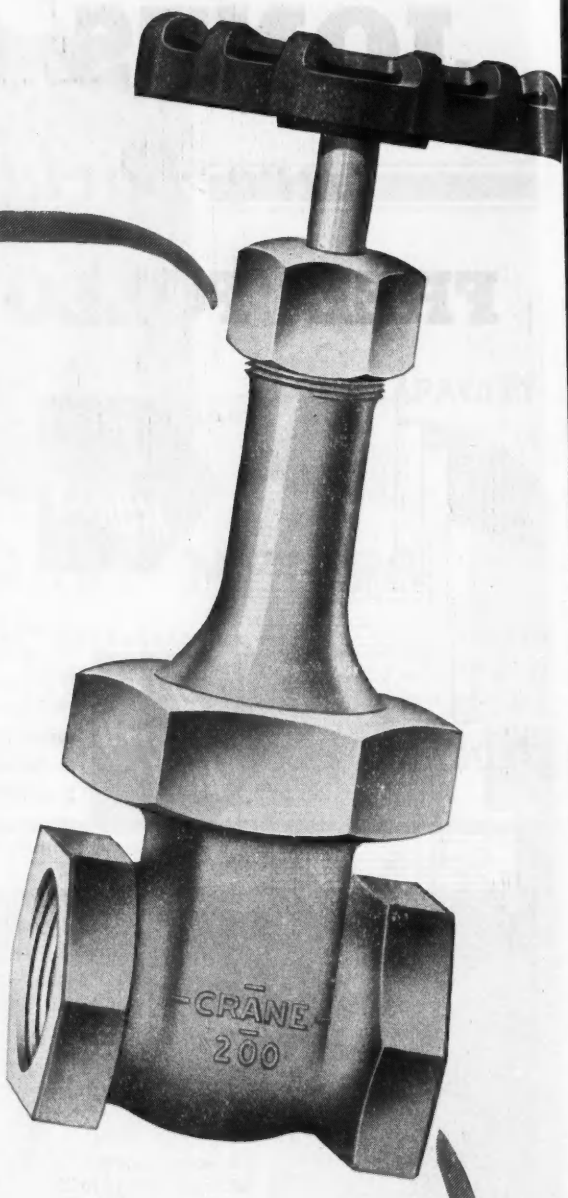

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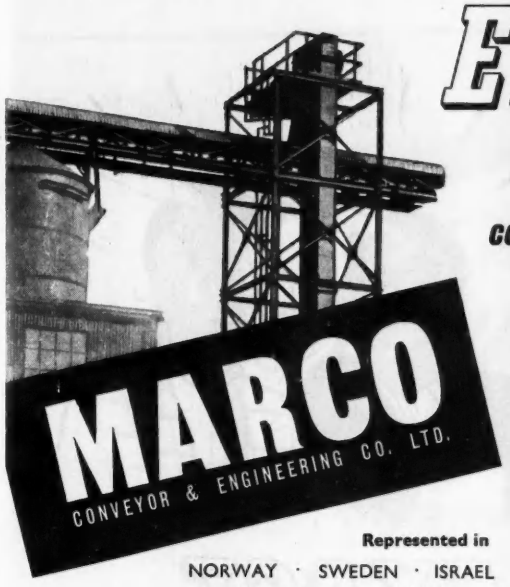

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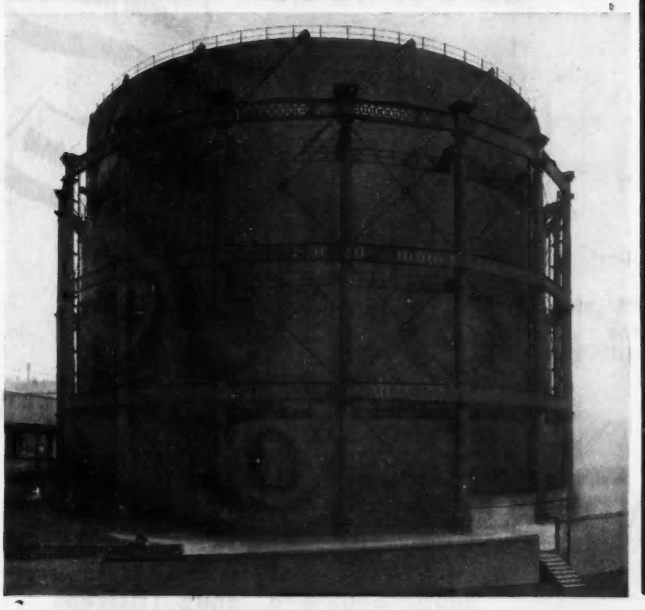

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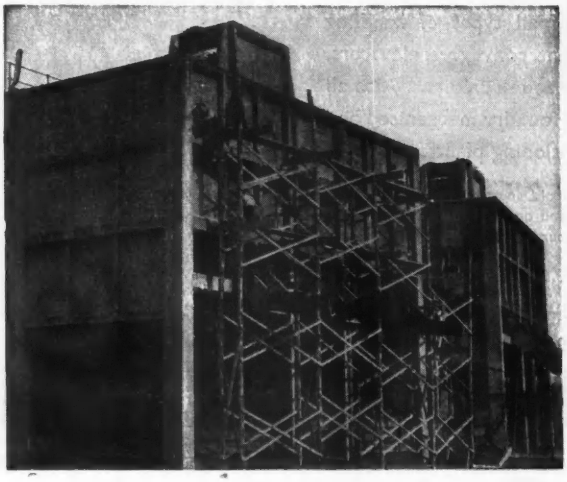

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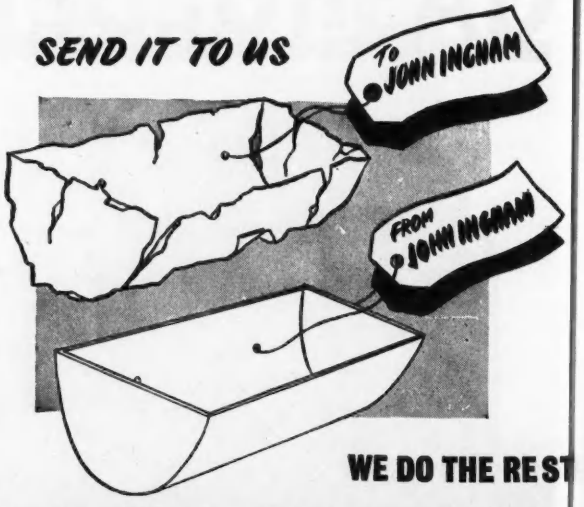

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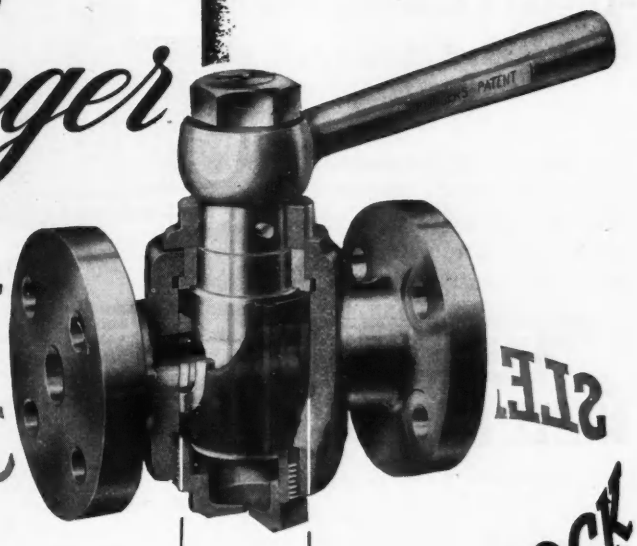

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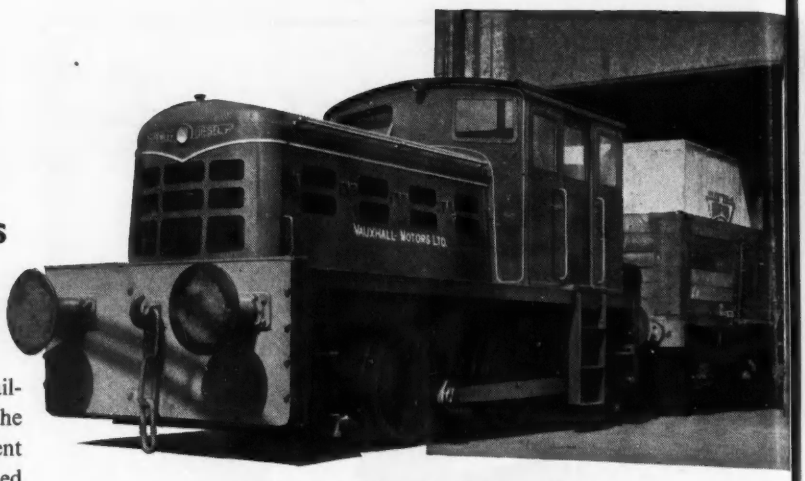

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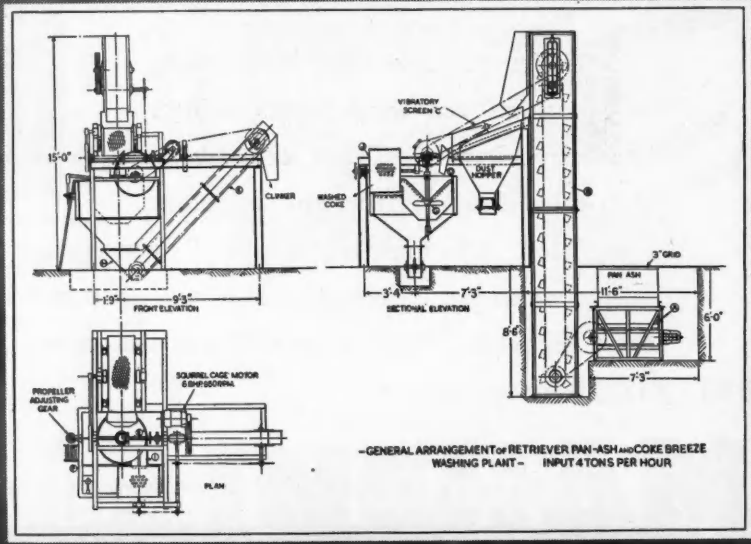

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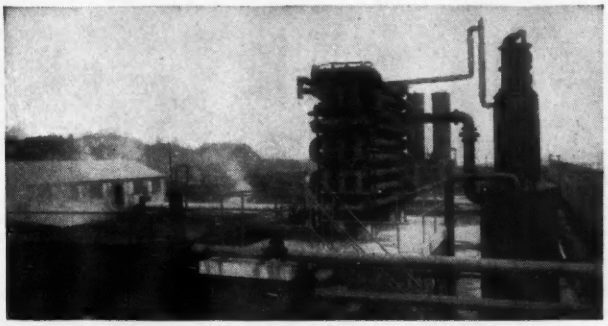

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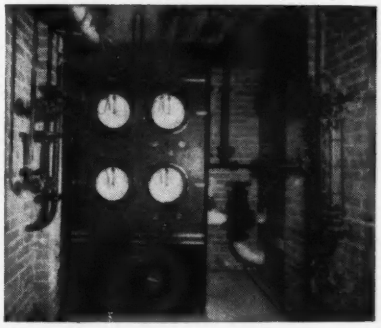

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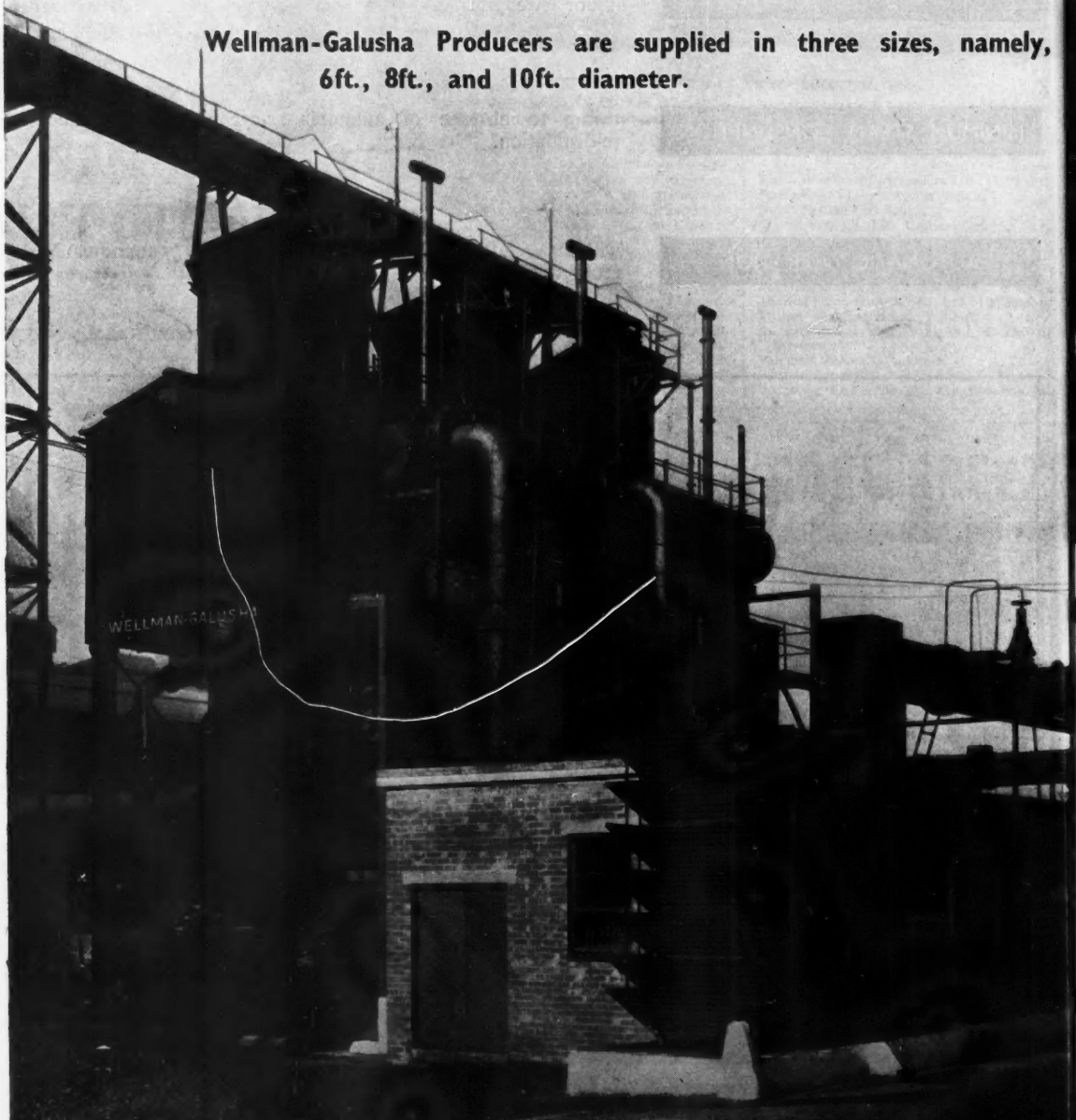

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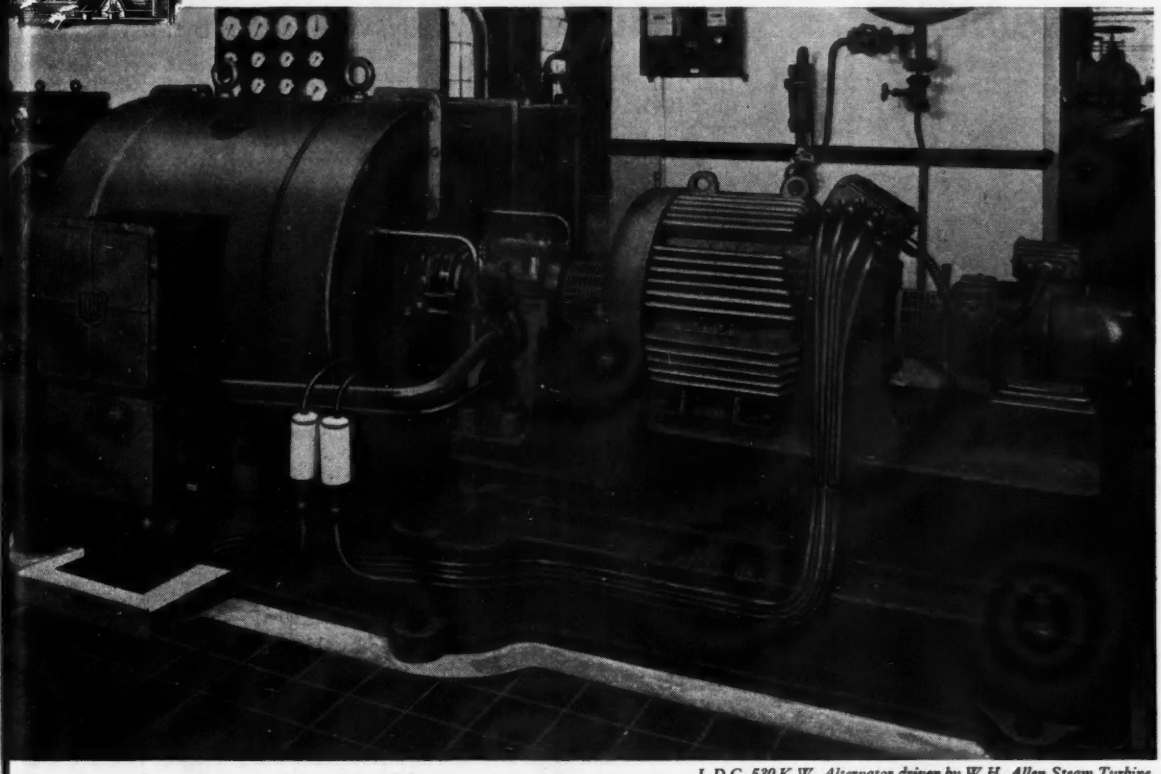

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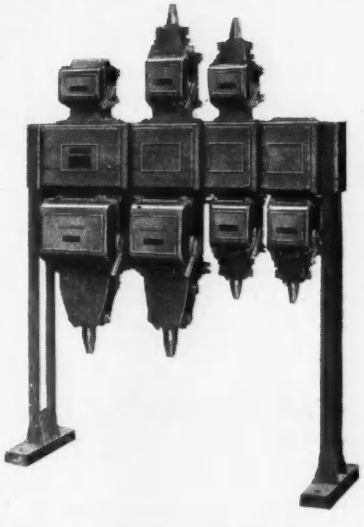

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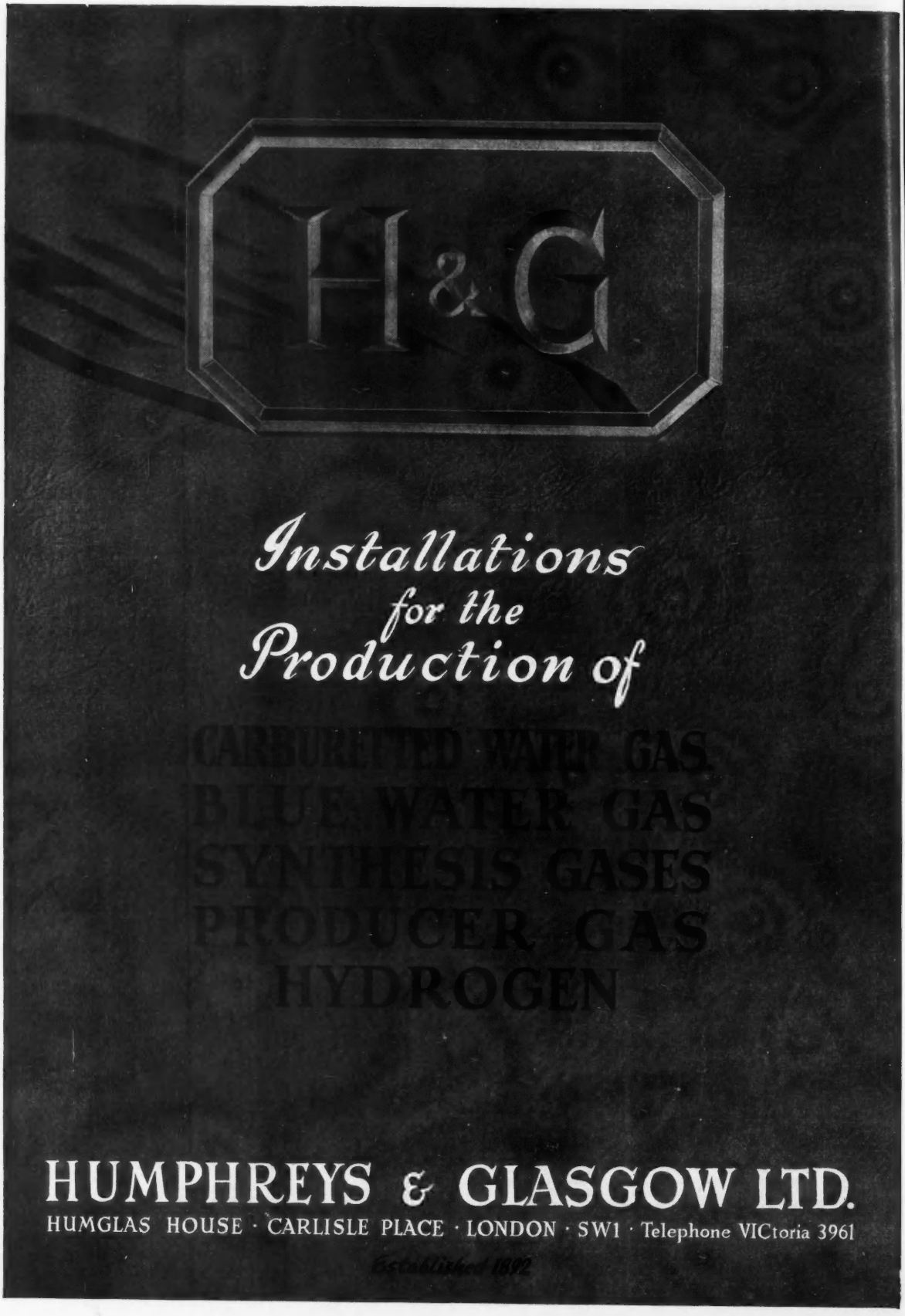
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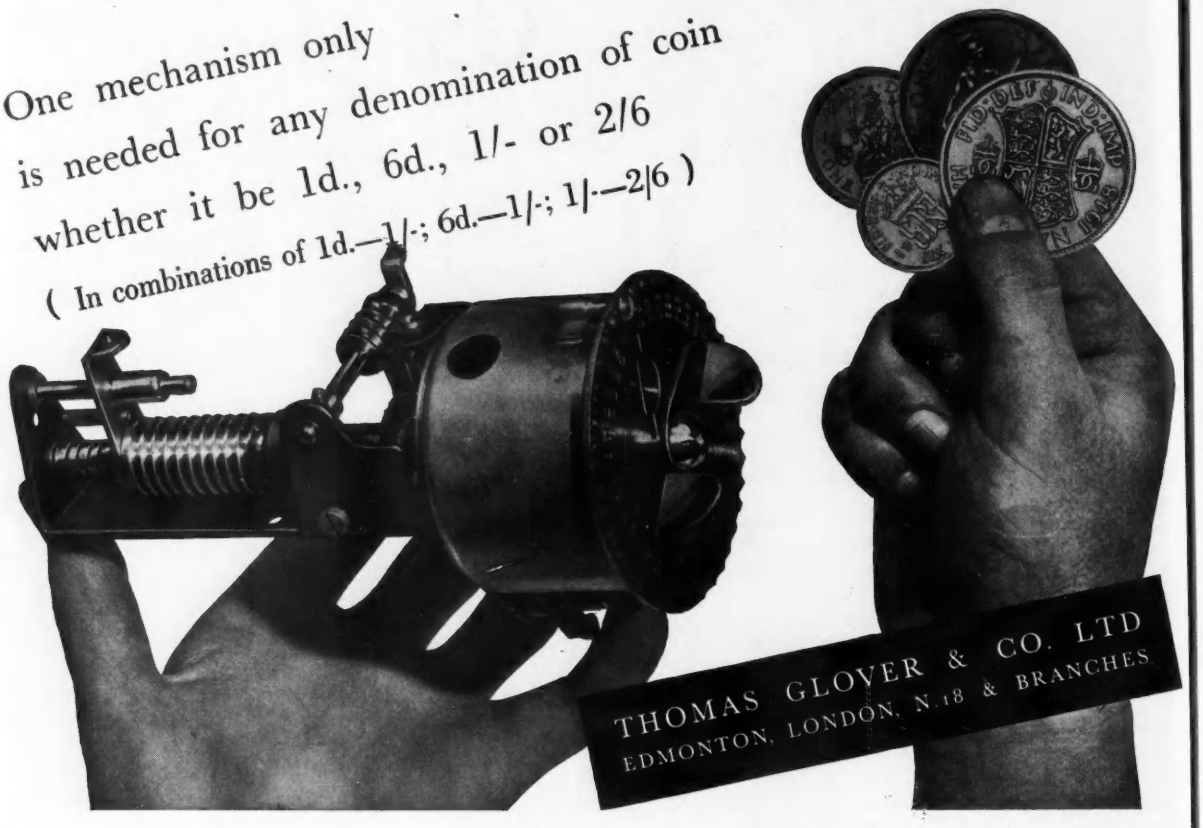

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GAS JOURNAL

VOL. 271. No. 4660 104TH YEAR SEPTEMBER 24, 1952

THE RIDLEY REPORT

THE appearance of the report of what will be known as Lord Ridley's Committee on National Fuel Policy—see last week's *Gas Journal*—is an event of great national and technical importance. We do not pretend that in the short time since its publication we have been able to make a full study of it. The discussion of it is likely to go on for a considerable time. What we offer now are some reactions from, mainly, the point of view of the gas industry to a reading of the report itself. The appendices contain a vast store of data and opinion which will also demand careful study and assessment to see how far they really support the report.

Let us say to begin with that this document is exceedingly well written with lucidity in presentation and a skilful simplicity in expression. Reasons are followed by conclusions and repetition is not disdained. It is not surprising that we do not always follow the logic and we shall not be expected to agree with all the conclusions. The gas industry will not agree that full weight has been given to its claims, particularly to the bed-rock fact to which we called attention in our cursory glance last week—that heating by gas requires roughly half the coal needed by electricity. But here are some of the reflections we made as we read through.

The Committee considered whether coal shortage will be a serious matter in 10 years time. After discussing the effect of coal rationing on domestic consumption it came to the conclusion that if consumption had not been restricted this would have been exceeded by no more than 5 mill. tons a year. We find it difficult to agree that even when account is taken of the use of substitutes the domestic consumer would have been content with no more than about half a ton above the 2½ tons to which he has been restricted. In a later paragraph the total figures for 1938 and 1951 are estimated at 46 and 35 tons respectively, a difference of 11 tons which, although offset by increased use of gas and electricity, would be increased by the growth of 5% in population and 15% in the number of households. The Committee claims no accuracy for its estimated demand for coal in 10 years. A more profitable speculation might be concerned with the probable distribution of whatever tonnage we are likely to get from the mines. At any rate we are reluctant to accept the somewhat complacent view put forward in the report that supplies of coal may be easier after the next few years. It is only fair to note that in the very next paragraph the report concludes that improved and maintained efficiency is essential if the fuel needs of the country are to be satisfied.

The Committee's internal disagreement on the price of coal is interesting. The somewhat timid suggestion of an excise of £1 a ton is not to be compared with Mr. Oliver Lyle's bold idea. On the whole we think there will be general agreement with the Chairman and his side on this point.

Turning to the domestic use of fuel we notice two things—a curious tenderness towards electricity, and an almost complete neglect of ventilation as an essential element in any system of room heating, and we have not overlooked its solicitude over excess draught and chimney throats. The fact is the electric radiator has generally no ventilating effect at all with the result that the room is stuffy. The report declines to commit itself to any judgment on the 'right' use of particular fuels. It comes down heavily in favour of solid fuel, even of coal, for room heating. It admits that the consumer's freedom of choice is limited by the equipment of his house, but it fails, it seems to us, to recognise that the equipment of his house has been in too many cases forced upon him without any freedom of choice, in that respect, at all. Later on the electricity industry is exhorted to abandon certain practices in which it indulges to secure a domestic load it cannot fully meet, but precious little is said of those restrictive practices by which it contrives to keep gas supplies out of new houses altogether. Gas is not a bit afraid of

consumers' freedom of choice and open competition provided the 'appropriate framework' is one which favours no one.

There seems to be a great effort in the discussion of the peak load consumption of electricity to avoid admitting that the domestic cooking load, for instance, taken on to spread the load has had the opposite effect; it has, together with the 'electric fire,' accentuated the peak. One of the tables in the report attempts to estimate in pence per hour the relative costs of a number of systems of room heating. Among the five conclusions drawn we note the 'traditional preference in this country for the open fire' and in the figures themselves the extraordinary idea that gas requires an item for housework while electricity does not. Whatever is she doing for her 0.02d. per hour? The same idea is seen in another table where the combination of coke and gas-cooking is costed for 'housework' at the same rate as all-coal. What we miss is an estimate of coal costs—*i.e.*, the share of the nation's coal supplies taken by each of these systems, not an easy estimate to make in view of the differing grades of coal, but one which should not be omitted in this discussion.

From the chapter on the non-domestic use of fuel and power there will be no great dissension on the part of the gas industry. We are content to be judged by results and the industrial consumer is too interested in getting a return for his money to be put off (or on) by mere propaganda. On the other hand the three paragraphs 202-204 on the gas and coke industry show how far the Committee was from appreciating our case. It was suggested to them that the value of gas, coke and the by-products of carbonisation was so great that the direct use, and still more the export, of raw coal should be cut down. This suggestion seemed to the Committee to undervalue the importance of consumer's choice, among other things—nor did it appear to take account of the waste of heat that would be occasioned by carbonising more coal than was necessary to meet demands for gas and coke. We wonder who suggested anything so fantastic as that!

But it is on the co-ordination of the several services of fuel and power that we most looked for guidance from the Ridley Committee. Its recommendations of a Tariffs Advisory Committee and a Joint Fuel and Power Planning Board both to advise and assist the Minister will, we think, be generally welcomed and we hope and trust that the Minister will act on them or something very like them without delay.

The Committee indicates no preference between the two-part and the variable block tariffs. It notes that when charges are made for connecting gas or electricity to new consumers they do not always seem to bear any direct relation to the costs of these connections. It does, however, seem to be aware that the electricians have used these charges (or the absence of them) as a weapon to keep gas out of the new housing estates. The recommendation appears to be that the annual charge on these costs should be standardised for the typical case and added to the fixed charge of a two-part tariff or the price of the first block—not, we think, a bad suggestion.

Meantime, we sympathise with the frantic efforts of our electrical friends to get out of the troubles of their peak loads, accentuated, as we have always contended, by their determination by all means to secure the cooking and space heating loads. They are recommended 'permanently and publicly' to 'abandon restrictive conditions embodied in old contracts.' We hope the Minister will also see to it that the consumer is really 'enabled to make an informed choice' which he cannot do if measures continue to be taken to keep gas mains out of the new housing estates and gas pipes out of the new houses. Artificially stimulated demand is no good to any industry.

The Committee's discussion and conclusions on the powers of the proposed Joint Planning Board are no doubt sound. It will be of very great interest to note the reactions of the Ministry to this and the proposal of the Tariffs Advisory Committee. It is pretty certain that some sort of pressure or control will be necessary to implement the suggestions of the Committee.

WISE COMPROMISE

THERE is surely no gas load which for its size is less publicised than public lighting. The gas industry appears to want to disown it but cannot afford to do so. To be sure, the profits are not large—in some cases they are practically non-existent—but the load is a steady one and one which must be met from the standpoint of public responsibility. But the industry feels little pride in it, the more so because the actual standard of lighting is not infrequently a factor beyond its control.

However, even the burden of a poor relation (as this load must appear in comparison with some of its brothers) can be lightened by a determination to make the best of it, and we have felt for some time that there was a need for a new attitude towards gas street lighting and a new policy, both within the industry and without. It is for this reason that we studied with interest and pleasure Mr. Norman Hudson's paper at the A.P.L.E. conference this year. The author is Chief Commercial Officer to the North Eastern Gas Board, but his paper ('Street Lighting—A Wise Compromise') is in no sense local. On the contrary, it suggests a policy which would, by wise compromise in planning and expenditure, enable the general standard of road illumination to be improved in such a manner that the difference between the best and the worst conditions would be steadily reduced instead of increased as is the case in many districts today.

It is in fact a national plan and one which should commend itself equally to the gas industry and to the local authorities. Briefly, Mr. Hudson's contention is that as a short-term policy the worst lighting, whether by gas or electricity, can be made much more effective with little, if any, increased cost to the ratepayer. Such installations can, he claims, within the limits of existing costs, be made either to give better service until such

time as the financial and material position make it possible to install schemes which comply fully with the more modern standards envisaged in the code of practice, or can be improved to such a standard as will satisfy the lighting needs for years to come. In many cases, he feels, it might appear that the need for re-siting would make the cost comparable with the provision of an entirely new installation, but in practice many existing layouts would require no major changes in siting and when obsolete fittings had been replaced and the height of the source raised to 13-15 ft., effective lighting would be obtained.

The author puts forward some interesting figures to show the rate at which gas-lighted street lamps may be replaced if the present trend continues unchecked. In one year, during 1951, the number of gas lamps was reduced by 16,472 or 2.44%. Over the same period the amount of gas used for street lighting fell by only about 0.1%—*i.e.*, from 53.4 to 53.34 mill. therms, due presumably to the lumen output of some gas equipment being increased to give better illumination. Mr. Hudson points out that if this rate of reduction is maintained, at December 31, 1961, there will still be 481,941 lamps gas lighted, and 10 years later there will be 317,221. Even if the 1951 rate of reduction is doubled as and from January this year, there will still be 317,221 lamps lighted by gas 10 years hence and the last one will not be dispensed with for 20 years.

From this Mr. Hudson concludes, very naturally, that whether we like it or not, it is probable that the gas industry will still be producing a large quantity of gas in 10 years' time for street lighting purposes and that even if the 1951 rate of conversion to electricity is doubled, a not inconsiderable sum of the ratepayers' money will have to be set aside each year to pay for it—over the next 10 years it would, on the above estimate, amount to at least £20 mill. And this, as Mr. Hudson aptly remarks, is no chicken feed. His point is, of course, that the sum is so large that every effort should be made to get the best value for it. And if the effort is *not* made, the results will include continued and perhaps increased road danger, and probably a large measure of criticism of the gas industry.

As we have already indicated, the author suggests both short-term and long-term policies. The former allows many roads at present badly lighted with gas equipment to be brought up to a better and more uniform standard at very little, if any, increased cost to the taxpayer, pending such time as it is possible to install a completely new scheme. The latter indicates how an existing installation can be improved so as to provide lighting of good quality for some considerable time to come, and recent developments in the Borough of Holborn are quoted. And the paper further demonstrates how the savings which can be effected by installing modern gas lanterns in place of old equipment can more than offset the additional charges incurred in providing the new equipment.

The arguments put forward in Mr. Hudson's paper could, and we hope will, have a profound effect upon the present attitude towards gas street lighting. It gives it a new lease of life—useful life—and shows that the time has not yet come for gas to leave the stage; and that when that time does come, its exit need not be as ignominious as has seemed likely. In fact, if Mr. Hudson would permit it, we suggest a slight alteration in his choice of title to read 'Street Lighting—A Wise Paper.'

COAL ECONOMY AND COKE

AN awakening of our rulers to the basic facts of the fuel situation may lead to that most fruitful of developments, a real co-ordination of the several industries engaged in the supply of heat, light, and power to domestic and industrial consumers. A series of articles recently published by the *Observer* under the general heading 'Re-thinking our Future,' included the question of coal—'Making the Best of Coal.' 'Next to the land, Britain's coal deposits are her most important "primary" asset .... Although it is true that the best coal seams have gone .... there is still enough coal left in the ground for a long, long time. In our struggle for economic survival during the next few decades we must make the best of it.' Thus the *Observer*—but what is a long time and how much longer is a long, long time? It has been shown that there may be supplies of bituminous coal with properties suitable to gas and coke production, at about the present rate, for another 100 years. Sir Charles Darwin in his brilliant essay 'The Next Million Years' puts at 500 years the exhaustion of the world's supplies of fossil fuels—coal and oil. Would 100 years be a long time and 500 a long, long time? Whatever the answer, it is already high time we came to a definite decision about what to do to safeguard this our most important primary asset—our only claim to a leading industrial position in the world.

The next proposition in this very intelligent summary is that we need much more coal for export. We shall not argue about that now because we recognise that it would be very useful, just now, if we had coal to spare to exchange for food, but we make the reservation that we are not at all certain whether in the long run we can afford to export raw coal which could be worked up into products with a much higher labour content. The third proposition is that coal is needed not only as a fuel but as a raw material in chemical industries of necessary importance. The conclusion is that in 15 years' time our requirements are more likely to be 300 million tons of coal per year than the 240 millions foreshadowed by the Board's 'Plan for Coal.'

It is not a new idea either that we are a nation of fuel wasters. We have sat down in the complacent attitude that Well! the Britisher likes his open fire. Everyone else in the world gets on very well without it, but Britain is unique in two respects. We burn raw coal in home and factory in exceedingly old-fashioned and wasteful appliances, causing a shocking waste of coal and enormous indirect costs through the pollution of the atmosphere. To that statement objection might be taken that, broadly speaking, the industrial consumer has lately mended his ways so considerably that the

major portion of the blame in this respect falls upon the domestic consumer. There is little doubt either that the substitution of efficient gas-using for raw coal-fired appliances would make greater strides if the gas industry were allocated more capital and steel to provide the plant to meet the ever-growing demand—and if the gas-making coal continued to be available in the growing necessary quantity, and was never diverted to other uses.

COKE AT HOME AND ABROAD

IN the meantime it is useful to step aside to contrast with our own the attitude of our Continental brethren to the use of coke in domestic space-heating appliances, as set out in the Report of the Association Royale des Gaziers Belge presented to the International Gas Union in Brussels. The first point that strikes us is that the idea of using coke in an open fire never occurs to our Continental colleagues. Much ingenuity is being displayed in this country in the design of open fires which will consume coke with an efficiency higher than that realised in the use of coal. At best the thermal efficiencies achieved do not greatly exceed 40%. In the Continental closed stove, the French poêle 70% is the minimum standard.

It is worth while to examine the standard requirements set out in the Belgian report. The three main stipulations are that a satisfactory stove shall have the minimum efficiency of 70% during periods of normal working (defined as 50% of its nominal capacity); it shall operate normally without charging or de-ashing for a minimum of six hours; and it shall continue to function shut down (as during the night time) without attention for a minimum of 12 hours with a maximum coke consumption 25% of that under normal working conditions, and after this period there shall be sufficient burning fuel left in the grate to ignite a new charge of coke. There are other conditions governing the close control of air admission, the gas-tightness of the apparatus, the general accessibility of controls, supplies, and ash removal arrangements. That these prescriptions are not found unduly onerous by manufacturers is shown by the fact that several of the appliances submitted for test by the Association have realised efficiencies of 75% to 80% with duration of burning over-night (that is, without attention) for 15 to 18 hours with 20% of the normal hourly consumption of coke. The method of testing is fully described in the report.

The coke which our Belgian friends have in mind is somewhat different from most of the gasworks coke which we have for sale. It can be inferred from the report that they have in mind the smaller sizes of coke-oven coke primarily made for metallurgical uses. But even so, they note that the low density of coke compared with that of anthracite or coal means no more than that the cubic capacity of the stove must be correspondingly greater to accommodate an equivalent weight of carbon.

The specification of a good coke, given in the report, is that it shall have an ash content not exceeding 12% to 14%, humidity less than 5%, an entire absence of dust, and close grading—a coke, for instance, graded to 10 to 20 mm. shall not contain any pieces outside these limits. These requirements do not seem to be unattainable, even in this country, but there is still the condition that the consumer must have an absolute guarantee of a continuous supply of fuel within the specification, or at least a guarantee equal to that to which he is accustomed in his gas supply.

There are difficulties in the emulation of these standards in our own country in the recital of which no useful purpose is served in going to too great a length or detail. Ash content of coke is rigidly governed by that of the coal from which it is made and over which the gas industry has no great control. There are far too many gasworks without adequate apparatus for the close grading and de-dusting of coke. Coke sales organisation is perfect in too few urban districts. If these defects could be mitigated or removed, much could be done to improve the overall efficiency of coke-fired space-heating equipment, particularly if combined with a determined popularisation of the closed or openable fire coupled up with hot water supply.

CONFERENCE ON ASH AND CLINKER

IT is surely more than a coincidence that the first Press conference to be held by the Institute of Fuel was called during the Presidency of Dr. G. E. Foxwell, himself a journalist, and we commend the adoption of such a plan which is clearly of benefit to all concerned. The purpose of the gathering was to bring to the notice of the Press, and thereby its readers, an important conference to be held on October 28 and 29 at the Institution of Mechanical Engineers, Storey's Gate, S.W.1. The conference will be devoted to 'A Special Study of Ash and Clinker in Industry,' a field of fuel technology particularly suitable for exploration at the present time. Ash has always adversely affected combustion processes using solid mineral fuels, but it has caused new difficulties as industrial techniques have been extended in the direction of larger boiler units and higher temperatures and pressures; moreover, there is a tendency towards the production and marketing of coal having a higher ash content than formerly. Subjects to be covered by the conference will include the fundamental properties of ash, sampling and analysis, the partial removal of ash from coal by cleaning processes, its treatment and disposal, influence on boiler design, quantitative effect on boiler efficiency and methods of evaluating coals of varying ash content. The contribution most directly affecting the gas industry will be 'The Influence of Ash on the Operation of Gas Producers in the Gas Industry,' by L. G. Townsend, of the Liverpool Group of the North Western Gas Board. This paper will deal with the effects of ash and clinker on the operational and constructional details of the main types of gas producer. The use of annular jackets on mechanical plants will be considered from the point of view of wear and tear due to clinker adhesion, and it will be suggested that the development of new types of plant with increased output is hindered by difficulties associated with clinker formation. We have said enough to indicate that the conference is likely to be an important event and one which may do much to promote a better understanding of this somewhat vexed subject. We would advise those of our readers who contemplate attending to obtain further particulars from the Secretary of the Institute at 18, Devonshire Street, W.1.

Personal

Mrs. A. Morrow, Lady Mayoress of Liverpool, has been installed as President of the Liverpool and District branch of the Women's Gas Federation. The ceremony was performed at Radiant House by the retiring President, Mrs. Vere E. Cotton.

◇ ◇ ◇

Mr. A. R. Croft, Divisional Accountant at Middlesbrough, for the Northern Gas Board, has been appointed General Manager of the Board's western group which includes Penrith, Carlisle, and Workington divisions. Mr. Croft before joining the Gas Board was treasurer to Fulwood Urban Council, Preston.

◇ ◇ ◇

Mr. Ralph Bint, Administrative Officer of the Fylde Group, North Western Gas Board, successfully defended two tennis titles won at Devonshire Park, Eastbourne, last year. In the veterans singles (All England Championship) he defeated A. Heron, of Leeds, in the final 6/2; 6/2; and in the Veterans (Level) singles he defeated W. Green, of Southampton, 6/1; 6/0.

◇ ◇ ◇

Mr. J. R. Martindale, Engineer of the Edinburgh Division, Scottish Gas Board, has been appointed to the position of Chief Engineer to the Wellington Gas Company, New Zealand. Mr. Martindale received his education at Cotham School and the Merchant Venturers' Technical College, Bristol, and after training with the engineering and architectural firm of George Adlam and Sons, Bristol, held several appointments with the Bristol Gas Company, after which he was appointed Chief Engineer and Assistant General Manager to the East Hull Gas Company. Before taking up his present post in Edinburgh, Mr. Martindale held the position of Engineer-in-Charge, Neepsend, Sheffield. He will be leaving for New Zealand towards the end of the year.

◇ ◆ ◇

Mr. Henry Carlyle Wilson Bennetts has been appointed Director of Sales to Allied Ironfounders, Ltd., in place of **Mr. W. T. Wren,** who has now become Assistant Managing Director. Mr. Wilson Bennetts started work with F. G. Minter, Ltd., contractors, Putney, afterwards joining William Willett, Ltd., as an architectural draughtsman. Subsequent to this he was engaged as a surveyor's assistant on reconstruction work in St. Paul's Cathedral, after which he joined R. & A. Main, gas appliance manufacturers, until joining the staff of Allied Ironfounders, Ltd., in 1938. He was appointed a Director of General Gas Appliances in 1942, and became Chairman and Managing Director of that Company in 1945. In addition, he is Managing Director of two other subsidiary companies of Allied Ironfounders—Allied Steel Pressings, Ltd., and Falco Electrical Appliances, Ltd.

Obituary

Mr. J. T. Joyce, Engineer and General Manager of the Weymouth and Dorchester group of the Southern Gas Board, died suddenly on September 18. Before nationalisation, Mr. Joyce was Director, Engineer and Manager of the Weymouth Consumers Gas Company.

◇ ◇ ◇

Mr. Arthur Charles, M.B.E., who had been a Director of United Gas Industries, Ltd., since 1941, died on September 18 after a short illness. Mr. Charles had been associated with one of the firm's subsidiary companies, Smith Meters ,Ltd., for the greater part of his life and was the inventor of numerous patented devices concerning gas and electric meters.

MR. STEPHEN TENNANT

has now taken up his appointment as

Staff Photographer

WALTER KING PHOTOS.

All enquiries for Works or Studio photography will receive prompt attention.

Diary

Sept. 25.—North Thames G.C.C.: North Thames Gas Board offices, Monck Street, Westminster, 2.30 p.m.

Sept. 26.—North of England Section, I.G.E.: Meeting at Newcastle-upon-Tyne. Paper by K. E. Brown, 2.15 p.m.

Sept. 26.—Manchester and District Section, I.G.E.: Visit to Robert Dempster and Sons, Ltd., Rose Mount Ironworks, Elland, Yorks.

Sept. 27.—Eastern Juniors: Presidential Meeting, Arnolds Restaurant, Great Yarmouth, 11 a.m.; Luncheon by invitation of Eastern Gas Board, 12.30 for 1 p.m.; Circular Tour, 2.30 p.m. Ladies invited.

Sept. 29.—West Midlands G.C.C.: Queen's Hotel, Birmingham, 2.30 p.m.

Sept. 30.—Manchester District Juniors: Extraordinary General Meeting, Manchester, 6.30 p.m.

Sept. 30.—Wales Juniors (North): Visit to Coal Washing Plant at Gresford Colliery, 2.30 p.m.

Oct. 1.—Institution of Heating and Ventilating Engineers: 'Industrial Radiant Heating,' F. R. L. White, Vice-President, at the Institution of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m.

Oct. 4.—Western Juniors: Meeting, Cheltenham. 'Flexible Joints in Main and Service Laying,' S. W. Hayes.

Oct. 4.—Yorkshire Juniors: Annual General Meeting, Leeds. Address by J. M. McLusky, General Manager, Wakefield Group, North Eastern Gas Board.

Oct. 4.—Scottish Juniors (Eastern District): Meeting. Presidential Address by T. R. Cameron.

Oct. 7.—Midland Juniors: Presidential Address by D. J. Ward. Staff Mess Room, Birmingham, 6.30 p.m.

Oct. 7.—South Eastern G.C.C.: Caxton Hall, Westminster, 2.15 p.m.

Oct. 8.—South Western Section, I.G.E.: Annual General Meeting, Taunton. Paper by T. H. Pardoe.

Oct. 10.—London and Southern Juniors: Meeting. Presidential Address by C. D. Shann.

Oct. 11.—Manchester Juniors: Annual General Meeting, Blackpool. Presidential Address of A. K. Howell.

Oct. 16.—Institution of Mechanical Engineers: Annual Dinner, Dorchester Hotel, Park Lane, 7 for 7.30 p.m.

Oct. 16.—Institution of Gas Engineers and **Coke Oven Managers' Association:** Joint Meeting, 'Selection of Gas Manufacturing Plant in Relation to Supplies of Coke Oven Gas,' F. G. Pyper, East Midlands Gas Board, at Institution of Civil Engineers, 2.30 p.m.

Oct. 17.—Midland Section, I.G.E.: Visit to Four Ashes works of Midland Tar Distillers.

Oct. 17.—Institution of Mechanical Engineers: General Meeting, Presidential Address of Sir David Pye, C.B., 'The Art of the Practical Engineer,' 5.30 p.m.

Oct. 20.—Institute of Fuel: Melchett Lecture, Dr. D. T. A. Townend, C.B.E., at Institution of Mechanical Engineers, Storey's Gate, S.W.1.

Oct. 21.—Midland Juniors: Meeting. Paper by C. P. Astbury.

Oct. 21.—London and Southern Section, I.G.E.: Annual General Meeting, London.

Oct. 21-24.—Dairy Show, Olympia: Gas Council exhibit, stand 146/147.

Oct. 30.—North Thames G.C.C.: Westminster City Hall, W.C.2. 2.30 p.m.

Oct. 30-Nov. 1.—North Eastern Gas Board: Conference of Senior Officials, Harrogate.

In the *Journal* of August 20 (p. 408) we published photographs and details relating to the gas installation at the Co-operative Bakery, Hull. Unfortunately, we were incorrectly informed that the figure for the total annual consumption was 3.6 mill. cu.ft. This in fact was the consumption before the latest addition to the installation, which now brings the total consumption to approximately 9 mill. cu.ft.

A.P.L.E. Conference at Harrogate

Long-Term Policy for Gas Lighting

THE annual meetings of the Association of Public Lighting Engineers are remarkable for, among other things, a discerning choice of venue. The meeting this year, the 28th, was no exception as members visiting Harrogate for the conference soon found. As in previous years the scope of the conference was wide and business and social activities were skilfully blended. In addition to the presentation of five papers, not counting the Presidential Address, the usual exhibition of street lighting equipment was held and we noted with pleasure that one of the events arranged for the ladies attending the conference was a cookery demonstration given by the North Eastern Gas Board at its James Street demonstration hall.

In his Presidential Address, **Mr. E. Howard,** F.I.E.S., referred to a scheme for the award of a diploma as an indication of a professional standard in public lighting engineering, which had been approved by the Council since the last Conference. He explained that the proposal to institute a diploma was by no means new, for as far back as 1936 the Council had circulated to all members a 'Proposed scheme for examination of Students as Public Lighting Engineers,' but unfortunately it had been shelved for several years, chiefly because of the upheavals of the war and the inevitable departure from the Council of some of the promoters of the scheme. It had been revived when, in 1948, an Education Committee had been set up.

Educational Requirements

The educational requirements and experience deemed necessary for the award of a diploma had, he said, been adapted to meet the requirements of members of the Association with varying training and background. Of the present membership, about one sixth were professional public lighting engineers, whose time was taken up totally in the technical and administrative control of the public lighting of one lighting authority. A quarter consisted of those who, while having the administrative control of public lighting, were primarily civil engineers, and slightly less than half were primarily electrical or gas engineers whose duties included the control of public lighting on behalf of one or more lighting authorities. The remainder were engaged in the research, design, manufacture or selling of lighting equipment.

Provincial Sections

A further new development referred to in the address concerned a scheme for the organisation of provincial sections of the Association throughout the country which had also been approved by Council. Following the success of the Scottish and the combined Lancashire and Yorkshire Sections it was felt that the formation of other centres would provide a convenient means of encouraging personal contact between members, with particular benefit to junior members who might be unable to attend the annual conferences.

Of the papers presented at the conference that of most direct interest to the gas industry was 'Street Lighting—a Wise Compromise,' by **Mr. Norman Hudson,** M.INST.GAS E., M.INST.F., Chief Commercial Manager of the North Eastern Gas Board.

We have referred to this paper at some length editorially. It put forward what the author believed to be a policy which would, by wise compromise in planning and expenditure, enable the general level of the standard of road illumination to be improved in such a manner that the difference between the best and the worst conditions would be steadily reduced instead of increased as is the case in many districts today.

Pointing out that if the present rate of conversion to electricity was maintained there would be, at the end of 1961, 481,941 lamps still gas-lighted, and ten years later, 317,221, the author suggested that having regard to the large sum of money which would still be required to pay for gas for this purpose, every effort should be made to get the best value for it. As a short-term policy he suggested that if much existing gas equipment with which on average no more than 150 useful lumens was being maintained from each cubic foot of gas, was brought up to the modern standard of 190 useful lumens, the present light output could be obtained with the use of 20% less gas; the output of useful light could be increased by over 25% with no increase in the amount paid for gas; and a compromise between these two would provide, say, one-half increase in the useful light and actually provide some financial saving which could defray the cost of modernisation. As a long-term policy, Mr. Hudson suggested that a similar argument might be employed and he quoted the recent developments carried out by the North Thames Board at Holborn where gas lighting had been improved to such a standard as would satisfy the lighting needs for years to come.

EXHIBITION OF EQUIPMENT

As usual at A.P.L.E. conferences, one of the principal sources of interest was the exhibition of modern street lighting equipment, held this year in a marquee adjoining the Royal Hall and also in the grounds. In the following notes we make brief mention of the exhibitors familiar to the gas industry.

Range of Lanterns

William Edgar & Son, Ltd., are manufacturers of street lighting equipment, such as the Rivercourt, Eclipse and Caxton lamps, suitable for class B lighting. The Eclipse lamps shown featured a specially designed type of mounting for simple installation and easy maintenance. This firm also manufactures a variety of secondary and emergency lighting fittings, such as Way Out and Exit signs, both in the popular box design with stencilled wording and an attractive combination of etched glass panel end lighted by cylindrical burner boxes. Wording and finish are adaptable to requirements. These appliances, together with the B.W.39 and B.W.50 indoor and outdoor wall brackets, meet all present regulations for secondary lighting laid down by public authorities, and are being installed in cinemas, theatres, hospitals, schools, restaurants, etc.

Modern technique, applied to illuminated guardposts, and the new Signlite lighting units for externally illuminating all traffic signs, created attractive exhibits for the **Gowshall, Ltd.,** outside display.

In addition, delegates saw cast iron island sites that could be assembled quickly and easily, to give continuous service without any attention other than occasional painting. Centre island and lighting columns, a variety of tubular steel posts, floodlight fittings, and acrylic plastic beacon globes, suitable for illumination, were also on show. The range included guardpost '50,' in which there are no components to protrude, not even hinges.

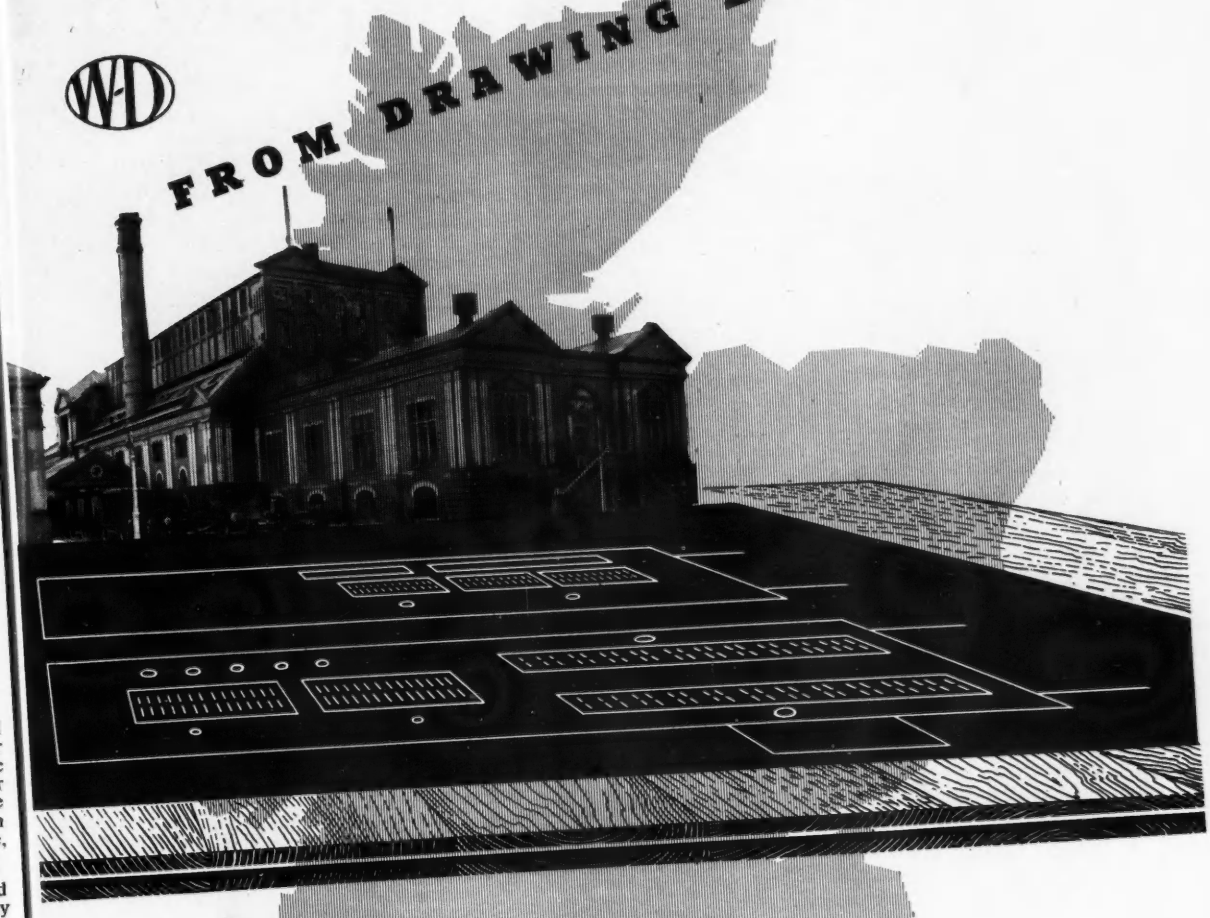
C. H. Kempton & Co., Ltd., displayed the Stellaris lantern which has many special features and is fitted with their patent prismatic reflectors. This lantern is suitable for adaptation and for the replacing of ordinary Windsor type lanterns. Among their other products is the Kemborn type suspension lantern which has proved satisfactory for class B lighting. This firm also has a special department for the repair, reglazing and maintenance for public street lighting, and will estimate for any such work for gas or electric supplies.

The popular Maxilla street lighting units of **Parkinson & Cowan (Gas Meters), Ltd.,** were again demonstrated, in addition to which the recently introduced Maxilla festival lantern was on view, mounted on a concrete column of pleasing design. The Maxilla lantern has been modified in design and approved by the Royal Fine Art Commission, and embraces a more elegant canopy and curved sprayed frog for upright mounting.

Standard Maxilla and Maxilla Junior lanterns are available inclusive of frog, in sizes from 2-Lt. No. 1 to 6-Lt. No. 2 The Maxilla extended frog has proved a popular and inexpensive method of improving existing installations by converting to correct mounting height on short columns. The Maxilla Units are fitted with a constant pressure governor

W-D

FROM DRAWING BOARD . . .



TO GAS BOARD

The No. 2 Retort House at the **Edinburgh Works of the Scottish Gas Board,** in which the Fourth and Fifth W-D Installations, each of 28 – 82" Lambent Heated Retorts, are at present under construction. The building also houses the First Installation of 88 – 76" Downward Heated Retorts. No. 1 Retort House contains the Second and Third Installations of 40 – 103" and 24 – 103" Upward Heated Retorts respectively. Thus there will shortly be a total of 208 W-D Continuous Vertical Retorts at Edinburgh with a coal carbonising capacity of 2,000 tons per day.

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The measuring unit of the Begwaco FLOMASTER meter—with its fully proved advantages of accuracy, silence and resistance to wear—has remained unchanged for five years. But the outer case is NEW, reduced to two parts only by using the latest methods of pressure die-casting in strong, light aluminium alloy. Undoing five screws opens the case: all fixing holes are external. The meter that has been making history from the day it was introduced takes a further step ahead.

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Precision built in die cast corrosion-resisting light alloy

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and fixed nipple in order to predetermine and control gas consumption. The Festival lantern embraces Holophane prismatic refractor panels with plain glass covers as a protection of the prisms from dust, also stippled or figured glass in the roadside, kerbside and bottom panels. Special attention has been devoted to easy glazing which has been effected by permanent spring clips which enables each pane to slide easily into position. The fittings are chromium plated and the ignition and control devices of standard make are neatly housed in a weather-proof controller box, with an 'L' shaped door and sloping top.

The well-known Southport lantern of **William Sugg & Co., Ltd.,** was heavily featured. The Holophane refractor plates which control the distribution of light in this lantern are now sealed to the cover glass so that routine cleaning is particularly easy through the large access doors provided. The Sugg '8000' lantern has been specially designed for improving existing installations. The burner will operate at full efficiency with either three or four No. 1 or 2 mantles. With four No. 2 mantles the lantern gives 2,000 lumens total and will provide excellent group B lighting at normal spacing. For many residential roads, however, a satisfactory standard of lighting will be obtained with three No. 1 or No. 2 mantles with correspondingly lower running charges.

For group A lighting the Company showed the larger version of the refractor panel Southport lantern which is of particularly neat appearance and has an equally effective form of light distribution.

The Rochester lantern was exemplified by the 6-Lt. size with an opal perspex shade, and further examples of the Sugg range were the compact illuminator for traffic signs, the new refuge lantern, and flashing beacon for low pressure gas.

Switches and Controllers

Aspec (London), Ltd., exhibited their well-known Kingsland controller which is fitted with a 21-day single train movement and is not affected by gravity or vibration, and will operate in any position. No screws, nuts or parts are required to be loosened or tightened up when altering the lighting and extinguishing pointers. The altering of one pointer cannot affect the position of the other, or others. The dial pointer, being fitted at the back of the dial, allows complete visibility of the dial, which may be set at any time. The controller has been simplified and standardised to such an extent that all the screws on the cock can be operated by using the winding key. The gas cock is fitted with a specially designed parallel plug, chromium plated for smooth working, passing approximately 60 cu.ft. of gas per hour at 4 in. w.g. The by-pass is extinguished during lighting hours.

The **British, Foreign and Colonial Automatic Light Controlling Co., Ltd.,** again exhibited the well-known range of Gunfire switches and controllers, the latter ranging from the 40-day model fitted with solar dial to the 21-day movement. In addition to the full range of hand-wound and synchronous models, the electrically wound types were also on show.

For many years the **Horstmann Gear Co., Ltd.,** of Bath, has specialised in the manufacture of appliances for the automatic control of public lighting and its products enjoy a reputation for reliability and ease of maintenance. Horstmann time switches, a good range of which were on display, have been developed to meet all the exacting requirements of modern lighting control and the comprehensive range covers hand wound models (15, 21 and 40 day run), electrically wound models and synchronous models with or without spring reserve, as required.

Metropolitan Gas Meters, Ltd., exhibited, among other items, the Duplex 15-day gas controller, which has a high grade movement with fully jewelled escapement, and strong bakelite case with screw fitting cover. The valve is of a shuttle type and does not stick and it can be set to act once or twice during 24 hours without fitting any additional parts. The by-pass is extinguished during lighting hours.

Lamp Columns

Concrete Utilities, Ltd., exhibited in the outdoor display a selection of lighting columns comprising four group A, and two group B. This display included one of the latest designs for installations using ffuorescent lighting, and types used extensively for housing estates. In the indoor exhibition an interesting feature was the scale model of the column door lock. This door lock possesses unique features plus simplicity of design and operation.

The display of 'Adastra' lighting columns by **Poles, Ltd.,** this year showed clean lines and absence of all superfluous embellishments. Protection of the columns against deterioration is ensured by hot dip galvanising after all manufacture is complete. The durability of the heavy zinc coating provided by this process is well known. Some examples were shown painted and others sprayed with a heavy deposit of bronze; light bronze and oxidised bronze variations of this finish were also seen.

The columns exhibited were of circular and hexagonal types covering group A and group B lighting. They were provided with modern lanterns which had been loaned by other manufacturers.

A wide choice of designs is available in the Stanton range of pre-stressed and reinforced spun concrete lighting columns, eight of which were shown at the exhibition. Fifty per cent. of the output of spun concrete lighting columns by the **Stanton Ironworks Co., Ltd.,** is now produced by the pre-stressing method, in which the compressive and bond strength of spun concrete is combined with the tensile strength of a special grade of steel.

The pre-stressed columns had the well-known Stanton ground finish, and ample room was provided in the base of the columns for equipment, which was secured by close fitting doors of hiduminium with Yale-type locks.

The demonstration of lighting columns included 12 standard tubular steel street lighting columns by **Stewarts & Lloyds, Ltd.**—eight suitable for group A roads and four suitable for group B roads. The columns were fitted with pendant, side entry and top mounting lanterns, and lanterns with fluorescent tubular lamps—all lent by the manufacturers for the purposes of this display. Ornamentation, in the form of scroll-work, collars, bases, etc., was not incorporated in any of these exhibits; the columns combined the qualities of strength and sound practical design with an overall appearance of grace and simplicity.

Other Exhibits

Maintenance outfits for gas undertakings were exhibited by **Allan Taylor (Engineers), Ltd.** The trailer model service pipe clearing outfit on show employed the method of coupling the outfit by 1 in. suction hose to the meter connection, the service pipe being cleared by vacuum; if required, pressure could be applied. The firm also produces syphon emptying outfits of which the vacuum type is very popular, as the liquor does not come into contact with the pump. A vacuum is obtained in the tank by means of a rotary type exhauster, driven by an independent four-stroke air-cooled engine. A special liquor valve is fitted on the suction line to prevent liquor entering the exhauster.

Allan Taylor pipe clearing and syphon emptying outfits were shown mounted on a Thames chassis and exhibited by the **Ford Motor Co., Ltd.,** which also displayed a 25 ft., 3-stage tower with oak and ash framing, manufactured by the **Eagle Engineering Co., Ltd.,** and shown in its standard form, with the elevating gear hydraulically operated. This gear incorporates a foolproof safety device to prevent the tower from accidentally descending.

The **Gas Council** was represented and the exhibit was planned to deal with essential problems of street lighting installation, design and maintenance. The stand demonstrated the efficient maintenance, replacement, and re-grouping of existing installations of gas lighting on public highways. This theme was illustrated in actual equipment, models, and photographs. The Council was also responsible for the platform display which illustrated the paper by Mr. Norman Hudson.

The trailer tower of **John Gibson & Son, Ltd.,** was mounted on a tricycle chassis, designed for towing by a vehicle and had pneumatic-tyred wheels. The front wheel was retractable, coming into use when the towing vehicle was disconnected. The frames were of aluminium alloy and telescoped into each other, being operated by a David Brown hand-winch gear. The inspection platform rotated through 360° and folded flat when not in use. The electric tower was similar in construction, but incorporated a Graiseley power unit which drove the tower at walking speed. This was battery-operated, the batteries being stowed in the centre of the chassis. Charging can be done overnight, the rates being pre-set and controlled automatically for a Legg charging plant.

The Plastics Division stand of **Imperial Chemical Industries, Ltd.,** was designed to show the progress and development of Perspex for street lighting equipment. Standard designs of refractor plates suitable for various lanterns

Concluded at foot of p. 686

A Window of the Engineering World

The Engineering Centre at Glasgow

ALONG Glasgow's famous Sauchiehall Street—a name which rolls round a Scotsman's tongue like Drambuie—you will find the Engineering Centre, the only one of its type in the world. It is a shop window with a difference, for the onlookers are principally men or boys of all ages and the products displayed are not for sale; they are for exhibition only.

The Engineering Centre viewed from Sauchiehall Street.

It was in December, 1947, that Sir James Lithgow opened the Engineering Centre. He described the enterprise as 'a clearing house of knowledge where designers, consultants, manufacturers, and buyers could meet on common ground—an ever-changing exhibition where the artisan could get a broader picture of his trade—and an institution of even more value to home and overseas buyers who could make enquiries about trades, peoples, goods, and processes without committing themselves in advance.

The Engineering Centre has certainly progressed in four and a half years very far towards these ideals set out by Sir James.

Exhibits in the Entrance Hall of the Engineering Centre.

Over 300 enquiries are dealt with monthly and the information section will handle any kind of enquiry provided it has some connection with engineering. To be asked 'What is the name of the oil refinery on Arula Island, Netherlands West Indies,' might stump many, but the answer was given within the three minutes of a trunk call. But all enquiries are not dealt with quite so easily and sometimes a week's work is involved.

Exhibitors now number over 300 and four floors of the building house exhibits from heavy engineering (appropriately housed in the basement) to the light and electrical engineering exhibits.

Lecture halls and committee rooms are available for hire and the Centre is the usual meeting place in Scotland for the Institution of Heating and Ventilating Engineers, the Institution of Incorporated Plant Engineers, and other important associations. A coffee room, where technical journals are displayed, is a good meeting place for the engineer and his friends.

The Youth Employment Service of the Glasgow Education Department seeks the co-operation of the Centre and some 1,800 boys, professing some interest in engineering, will be given the opportunity this year of seeing products from the different fields of engineering, and also of learning from manufacturers' representatives details of the various apprenticeship schemes in force. In this way the boys are assisted on deciding their final choice of career.

We congratulate all concerned, appreciating the value of the Centre's services to industry. Sceptics of 1947 have effectively been silenced by the Centre's achievements. The Centre, we are sure, is destined to progress.

PUBLIC LIGHTING EXHIBITION — Continued from p. 685

were shown together with other types of refractor ware, demonstrating the flexibility and accuracy of machined prismatic formations on Perspex.

Weathering and exposure trials were illustrated together with specimens that have been exposed in various locations in this country and abroad, and a ray path demonstration showed how light control was obtained with refractor plates and also how the high surface finish obtained on machined Perspex refractor plates reduced light loss and diffusion to a minimum.

The general range of aluminium alloy ladders shown by **John Keir & Co. (Manchester), Ltd.,** included many which were particularly suitable for street lighting maintenance work. The double tower ladders can be operated by one man and are provided with castors to the steel base, adjusting jacks, self levelling feet and road wheels for mobility. The triple ladders, to a height of 40 ft. also provided with these fittings are elevated by winch and wire rope and rest upon automatically operated pawls when in position. Tower ladders can be mounted on two-wheeled trailers for towing purposes and also on lightweight trucks when they can be transported to the site of operation in the horizontal position if required.

The three-stage tower wagon on a Bedford 3-ton L.W.B. chassis and cab with Eagle equipment, exhibited by **Vauxhall Motors, Ltd.,** had a tower of telescopic design erected on a steel subframe over the rear axle. The tower could be raised to a maximum height of 25 ft. from the power-take-off on gearbox and lowered by gravity to 13 ft. It could be locked in any position and had a strangulated return valve at the base of the ram, which acted as a safety device against crashing. A revolving platform was fitted to the tower, mounted on a steel sub-frame and turntable giving a full circular movement of 360°. The platform could be locked in eight different positions, and a fully-enclosed, all-metal workshop was mounted between driver's cab and the tower.

The Whelmer Incandescent Mantle Company exhibited their well-known artificial silk mantles which by constant research have been brought to a high standard of efficiency and durability.

A Busy and Interesting Year

Scottish Association Meeting at Largs

THE 91st Annual General Meeting of the Scottish Association of Gas Managers was held in the Barrfields Pavilion, Largs, on September 11, the President, Mr. E. G. Smith, M.INST.GAS E., Glasgow Division, Scottish Gas Board, in the chair. The President commented that this was the first year of the 'Scottish Association' and to those of them elected to administer its affairs it had been a busy and interesting year. There were many points of interpretation and application in the new Constitution which still required attention, and if they had not travelled as fast as they had hoped he was sure they had moved with care, and the wisdom of that would become more apparent in the future.

Extending a civic welcome to the delegates, PROVOST ANDREW MONTGOMERY, of Largs, said that they were glad to have the gas managers back in their midst again. Their last visit was still remembered for the friendliness and goodfellowship that had existed between the members and the people of the town.

The PRESIDENT said that the civic welcome was a recognition by Largs Town Council of the efforts of the gas managers as far as public service was concerned.

Mr. W. KIRK (Motherwell), Secretary of the Association, announced apologies from presidents and secretaries of kindred associations.

The PRESIDENT intimated that since they had met last, the death had taken place of Mr. Ernest V. G. Chalmers, who had been an Ordinary Member since 1926.

Distinguished Guests

He then extended a welcome to Colonel H. C. Smith, C.B.E., Chairman of the Gas Council, and Mr. Henry F. H. Jones, M.B.E., Deputy-Chairman; Sir Andrew Clow, K.C.S.I., C.I.E., Chairman of the Scottish Gas Board; Mr. George E. Currier, O.B.E., President of the Institution of Gas Engineers, Mr. J. T. Haynes, Vice-President, Mr. A. G. Higgins, Assistant Secretary; and Dr. H. Hartley, C.B.E., their William Young Memorial Lecturer.

Colonel H. C. SMITH, Chairman of the Gas Council, expressed his pleasure at being present at the first anniversary of the union of the North British and the Waverley associations. Since the nationalisation of the industry nothing had happened to interfere with the independence of their professional associations. Speaking of the Institution of Gas Engineers, Colonel Smith said the Gas Council had a very high regard for the Institution and the valuable work it continued to do. He believed in the closer affiliation of all district associations of the Institution. He thought that a great deal of the success achieved since nationalisation was due to the very friendly relationships existing among the managers in the industry. He was always a great believer in such associations as theirs, and he hoped nothing would happen to destroy their effectiveness. They enabled those in the industry to share in each other's knowledge and experience and they were going to need all that in the future.

Colonel H. C. Smith, C.B.E., Chairman of the Gas Council, chats with Dr. H. Hartley, C.B.E., after the Largs meeting.

There was, continued Colonel Smith, a danger that they had allowed themselves to live in a fool's paradise during the last few years. It had been quite easy to sell gas with coal severely rationed so that only 30 mill. tons was consumed in the domestic field as compared with 45 mill. tons before the war. 'The whole business was handed to us on a plate,' he declared, 'and it is a very dangerous thing to feel that one can sit back and take it easy and that one does not need to go out and sell gas. If restrictions placed on us regarding selling and advertising were removed, we must be prepared to go out and sell our product and appliances or we shall lose the battle with competitive fuels.'

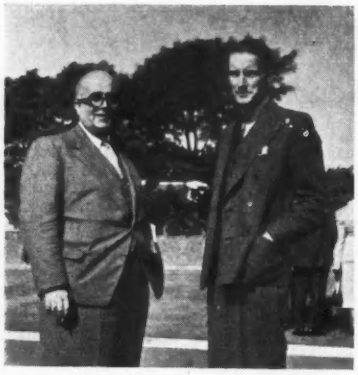
Colonel Smith said the industry had also to improve its product and improve appliances. Could anyone say they had reached the limit of efficiency in gas-making and that they should be content to obtain merely an extra therm or two? They could not be sure that another method of making gas would not be discovered or that the method of burning it represented the last word. He felt there was a great deal still to be discovered and they would have to apply their energies to new developments. He concluded by suggesting that the best thing they could do at the moment was to build good-will by giving the present consumers the best possible service.

Some of the ladies enjoying the sunshine at Largs putting green.

Mr. HENRY JONES, Deputy Chairman of the Gas Council, said that sales promotion staffs should look forward with eagerness to the opportunities of the future.

Sir ANDREW CLOW, Chairman of the Scottish Gas Board, said he always valued the opportunity of exchanging difficulties, experiences, and hopes, and he welcomed the opinion of critics, even when it was adverse criticism. During most of his life he had been trying to learn administration and one of the greatest qualifications was to be able to listen to other people. Exchanges of ideas were the basis of progress.

Mr. GEORGE E. CURRIER, President of the Institution of Gas Engineers, expressed appreciation of the monumental work done by Dr. Hartley in connection with the provision of the new headquarters of the Institution and he expressed his thanks to Colonel Smith



W. L. Hurdman and J. W. Broad.

for help and support given to the Institution, especially during the last three or four difficult years of transition. He had the honour to convey to them the Institution's greetings and best wishes on this the first anniversary of the formation of the new Association covering the whole of Scotland. At the end of this first year under this new title, the retiring President could look back on work well done. In the average town or city the manager of the gas undertaking had to be a man of many talents with a knowledge of human nature. The industry's long record of happy labour relations was testimony to his skilful use of the last of those qualifications. The continued technical progress of the industry had been due, in no small measure, to the enthusiasm of members who had been ready to initiate, adopt, and develop new ideas for the production and utilisation of gas and its by-products. 'Is it not remarkable,' said Mr. Currier, 'that men who can combine successfully so many varied functions and whose principal aim is to give service to the public should enjoy the high regard of the community. I believe that in Scotland, with its many widely dispersed undertakings, there has been less integration and centralisation than in any other parts of the country, and the manager has largely retained his previous status and responsibilities.'

Education

Owing to the isolated nature of many of its undertakings, continued Mr. Currier, the Scottish Committee had met with numerous difficulties in operating the Institution education scheme. And he advanced a plea for a fair trial of the scheme before any amendments were proposed. The scheme was the product of many years of work and study. Those who formulated it comprised not only educational experts but men who were and had been for many years concerned in the everyday running of gas undertakings. They could not do less than give their recommendations a reasonable period of trial. He realised that this year again the examination results had been disappointing. However, this was an experience which was not confined to their industry. To some extent the poor results must be regarded as a legacy of the late war, and he looked forward to a considerable improvement in the years to come.

He was sure that the qualifications for the higher executive posts in the industry must include a sound knowledge of industrial administration. The Education Committee of the Institution had already given this matter serious consideration and it was anticipated that in the near future recommendations would be forthcoming providing for education on this most important subject. The work and scope of the district education committees had received careful thought throughout the country during the last year and it was pleasing to note that there was almost unanimous agreement that these district committees could still render a service to the industry. He knew that the Scottish Committee held strongly to that view.

Safety Rules Committee

There was another aspect of the Institution's activities which he would like to touch upon briefly. He referred to the work of the Gasworks Safety Rules Committee. The Committee, composed of experts who could when necessary call upon the services of many other experts, applied a considerable amount of time and knowledge to their task. Often seven, eight or more drafts of a recommendation were prepared before they were satisfied that it was ready for publication. He would make a strong plea to all those responsible for the operation and maintenance of plant to study thoroughly and to implement the recommendations and codes of practice issued by the Committee. For convenience these were now issued in the form of a loose-leaf book. This volume was rated most highly by many who were responsible for the safe operation and maintenance of gasworks.

No doubt, continued Mr. Currier, many of them had heard of the Gas Industry Gallery which was being established in the Science Museum at Kensington. This exhibition depicted in a unique manner the growth of their industry. This was done by the use of illuminated moving diagrams in relief showing the principles of carbonisation and the development of carbonising plant, gas exhausting and pumping plant, the manufacture of carburetted water gas, and the principles of gas purification. Other displays dealt with metering, distribution, and utilisation. It was expected that this exhibition would be opened in November and he would strongly recommend that any of them attending the autumn research meeting of the Institution should pay a visit to the Science Museum.

Mr. Currier paid a tribute to Mr. D. D. Melvin for his invaluable work as a senior member of the Council of the Institution. Mr. Smith, too, had been a welcome addition to their strength during the past 12 months and he was sure that the Institution would also derive great benefit during the next three years from the services of Mr. D. Beavis, of Edinburgh.

Useful Training Ground

In the meantime, the proceedings of the District Associations provided a necessary and most useful training ground for aspirants to high office in the industry. In the next few years there would be a pressing need for men to take the highest posts in the industry. Far-sighted men were preparing now, and Association meetings formed a vital part of that preparation. The technical papers read at the meetings served as up-to-date text-books of the industry, and discussion of those papers developed the engineer's critical faculty and his ability to state his views in clear and concise language. Before, during, and after the proceedings, there was invaluable opportunity for informed discussion on many topics in a free atmosphere in which men could forget their seniority on the staff of the boards. In such an atmosphere, board members could supplement informally their official pronouncements on policy. In addition, they were able to observe at close quarters their younger colleagues and form judgments regarding those who were the most likely candidates for leadership in the industry. The choice of such candidates and the provision for them of opportunities for practice in the

After the meeting at Largs. Mr. and Mrs. E. West; Mr. and Mrs. C. A. Poulson; Mrs. F. R. Mitchell.

higher managerial functions was one of a board's greatest responsibilities today.

The PRESIDENT expressed thanks to the various speakers, extending his best wishes to Mr. Currier for his continued success in his year of office.

Annual Subscription

Following the approval of the Minutes of the last annual general meeting and the Council's Report, the PRESIDENT formally moved that the annual subscription for all classes be increased by £1 5s. from July 1, 1952. He explained that in the conduct of the business of the Association, the Council had been faced with ever-increasing charges, notably in connection with stationery and the cost of printing and distributing their Transactions. While the Council had arranged for various economies, there were some matters on which they could not economise. When the new subscription rate became operative they would have an estimated deficit of £600 and even with the new rate of subscription and application of various economies it was not expected that the deficit would be wiped out before 1957. They would therefore all appreciate the reasons for the adjustment in the subscription.

The motion for the increase in the subscription was adopted unanimously.

The PRESIDENT handed over to Mr. John C. MacDonald, of Kinghorn, Fife (on the Perth undertaking staff), the Association's award to the Scottish student earning the greatest distinction during the year in the examinations of the Institution of Gas Engineers. He also handed over the certificates won in the Institution examinations by the following students:

Ian Mercer Anderson,	Edinburgh.
Eric Leslie Black,	Glasgow.
Robert Bryson,	Glasgow.
William F. Cummings,	Glasgow.
Richard M. Currie,	Glasgow.
James Hendry,	Dunfermline.
John C. MacDonald,	Kinghorn.

The PRESIDENT said the objects of the William Young Memorial Lecture were well known and these lectures had achieved a wide prominence throughout the industry. Dr. Hartley was to deliver the lecture that day and he had a distinguished career as a chartered gas engineer, his services being recognised by the Institution when he was awarded the Birmingham Medal in 1950. Of his many achievements and distinctions, the best known to them referred to the Institution. He was President in 1948 and a founder and original member of Council for the Gas Research Board. In 1950 he was elected an Honorary Member of the Institution. He was awarded the C.B.E. in the 1952 New Year's Honours List and was now President Elect of the Institution of Vitreous Enamellers.

William Young Memorial Lecture

Dr. Hartley then delivered his lecture. (This was published in the *Gas Journal* last week.)

Mr. W. S. JOHNSTON, Dundee, said that the presentation of the William Young Memorial Lecture to their Association was something that was always looked forward to with pleasurable anticipation. The lecture they had listened to was one which must have made a strong impact on all their minds because it emphasised the most important problem of the day—namely, the conservation of their fuel. Dr. Hartley had pinpointed the fact that there was in the domestic sphere an inefficient use of fuel. They knew how housewives of their own country (and he was speaking of Scotland as opposed to England) were probably more 'thirled' to coal fires than people elsewhere, and they had to face the difficulty of weaning them away from that type of fuel use. It was also an undoubted fact that the more efficient appliances that were being produced gave a higher standard of comfort and allowed considerable saving in actual fuel. It was their job to educate architects and builders in the knowledge of new forms of heating and so assist the research people in their development of these appliances.

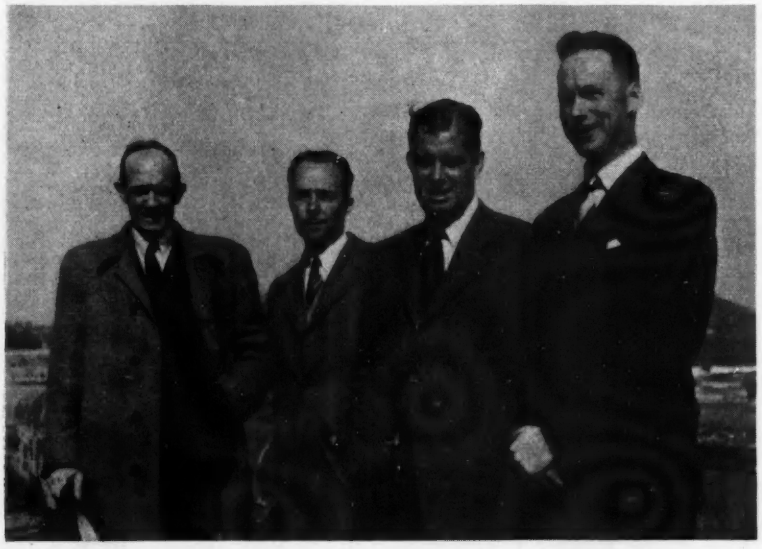
Mr. and Mrs. J. M. Adams at Whiting Bay.

As far as the electrical industry in the north of Scotland was concerned (and he had in mind the Hydro Electric Board which was independent of the British Electricity Authority) methods had been adopted in approaching local authorities to encourage them to develop all-electric housing schemes, and it was difficult to compete with such methods. It seemed that in some cases the charges for electrical services where gas was used in the houses varied to some extent corresponding to resistance made by the local authority, which might be thoroughly gas-conscious. The development of the coke market for domestic space heating was something which should engage their attention, but unfortunately in some places the screening of the coke was done by older methods and time had to elapse before modern plant was available to improve the sizing of coke. He moved that the Association record its thanks to Dr. Hartley for his lecture.

Practical Outlook

The vote of thanks was seconded by Mr. ALEXANDER MCFADYEN, Dumbarton, who said that the inclusion of Dr. Hartley's name in the list of William Young Memorial Lecturers was an honour to the Scottish Association of Gas Managers. Dr. Hartley was eminent in the world of scientific research and as such saw visions and dreamt dreams, but, being a Yorkshireman, he was thoroughly practical in his outlook and his commercial acumen was testified by his chairmanship of the great fuel appliance combine Radiation Ltd., a firm whose progressive development in the fields of gas utilisation had been of so much benefit to the gas industry. The lecture to which they had listened contained something of each of the attributes of the lecturer necessary to full appreciation of the subject—scientific and practical as befitted the occasion, with a hint of commercialism essential in these days when economics so much exercise men's minds.

Even if the subject were suitable it was conventional not to discuss in specific detail the substance of a William Young Lecture, but it was permissible to say



At Whiting Bay, Arran. J. Ford, A. Brown, A. McFadyen, and J. H. Fulton.

that Dr. Hartley had added emphasis to the real need for a national fuel policy, a policy which was established in the minds of all thinking people unbiased and prepared to face the gravity of a fuel situation which unless improved by greater production of coal or a very greatly increased efficiency in use by carbonisation and other methods of treatment threatened the economy of the nation.

Gas for domestic space heating had been concerned mainly with bedroom heating and had not been considered a good load because of irregular incidence. Estimated to amount to between 4% and 5% of all gas consumed, it was obvious that the field for extension of use in living rooms was very large. But such extension of use must depend on gas being sold at a price comparable in cost with alternative fuels.

National Fuel Policy

A national fuel policy ensuring rational development of the use of all forms of heat service in accordance with the characteristics of the demand for which each fuel was best adapted in cost and convenience must naturally be of slow growth, and the lecture stimulated interest in the subject and demonstrated the opportunities for gas to play an even larger part in the supply of fuel, which was fundamental to the welfare of the nation.

Dr. Hartley had done well to remind them of William Young's outstanding personality, practical idealism, intellectual vigour, and fertile and creative approach to the varied problems he faced. Young's life and work were an example which all of them, each in his own way, might be inspired to follow, and Dr. Hartley's tribute to the man expressed so eloquently must, if its message was imprinted on their minds, raise them to high endeavour. The author of the Lecture had made a notable addition to the list of William Young Memorial Lectures and to the many services he had himself rendered to the gas industry.

The PRESIDENT said he also desired to express his deep appreciation of the lecture given by Dr. Hartley.

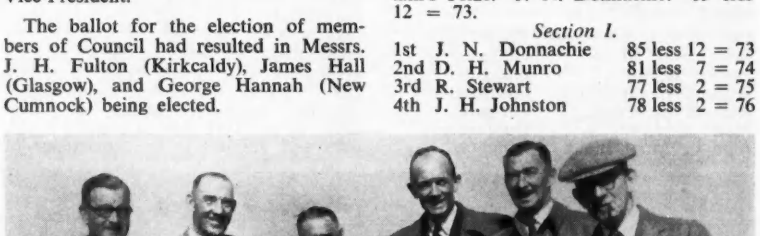
In the afternoon a paper on 'Industrial Gas' was given by Mr. Alexander Bujnowski, Sales and Publicity Officer, Glasgow Division, Scottish Gas Board. (The paper, together with our report of the discussion, will be found on later pages of this issue of the *Gas Journal*.)

The golf cup winner, J. N. Donnachie, photographed with Mrs. Stanley Bennet, who presented the prizes, and members of the golf circle.

Office Bearers

It was reported that Mr. Robert Cowie (Hawick) had been unanimously elected President of the Association for the coming year; Mr. John Ford (Inverness) had been elected Junior Vice-President, Mr. A. W. Brown (Aberdeen) stepping up to the position of Senior Vice-President.

The ballot for the election of members of Council had resulted in Messrs. J. H. Fulton (Kirkcaldy), James Hall (Glasgow), and George Hannah (New Cumnock) being elected.



C. H. Angus, J. M. Adams, G. Jenkins, J. Ford, W. Crawford, and H. Macpherson at Whiting Bay, Arran.

Investing Mr. Cowie with the chain of office, Mr. E. G. SMITH said he had given of his best to Junior, Senior, and Sales Associations in Scotland. He was a frequent and vigorous contributor to discussion and a man with a lively and active interest in everything connected with the industry. They would look forward to a useful year under his presidency. His father, Mr. Robert Cowie (Senior) was himself a past President and would be justly proud of his son during the next 12 months.

Taking the chair, Mr. COWIE said that with the Secretary at his side and an able Council at his back, and with such an excellent membership in front of him to help and guide him, it would be his object to do his best to maintain the traditions of the Association. He intimated that the spring meeting would be held at Peebles on April 16 and 17, 1953.

Mr. R. F. MITCHELL, handing over the presidential memento of office to Mr. E. G. Smith, said that the Association had completed its first year as the Scottish Association under his able leadership. Mr. Smith could look back with pride on his accomplishment during the past year.

Acknowledging the presentation, Mr. SMITH said that he had often envied past presidents who displayed their memento plaques in a prominent position in their homes. Now he could do likewise. The gift would keep fresh in his mind the memory of the many kindnesses he had received during the past year.

Mr. D. D. MELVIN proposed a general vote of thanks to all who were concerned with the success of the meeting; Mr. W. KIRK, the Secretary, in acknowledging, expressing the thanks of the members to the Scottish Gas Board.

Golf Competition

A large number of members and visitors took part in the Golf Outing which was played over the Glasgow Gailes Course on September 10. The following were the prize winners:—

Winner of Challenge Bowl and Captain's Prize. J. N. Donnachie. 85 less 12 = 73.

Section I.

1st	J. N. Donnachie	85 less 12 = 73
2nd	D. H. Munro	81 less 7 = 74
3rd	R. Stewart	77 less 2 = 75
4th	J. H. Johnston	78 less 2 = 76

Section II.

1st	A. W. Brown	91 less 16 = 75
2nd	A. McFadyen	96 less 20 = 76
3rd	W. S. Johnston	96 less 17 = 79
4th	H. S. Milne	99 less 20 = 79

Visitors.

1st	W. Gray	82 less 13 = 69
2nd	A. J. Lawrie	78 less 6 = 72
3rd	J. P. MacCrae	90 less 12 = 78

The annual general meeting of the Golf Circle was held in the Clubhouse afterwards with the Captain, Mr. STANLEY BENNET, in the chair. Mr. Bennet said he was pleased to see such a large attendance and extended a welcome to the visitors, who included Colonel H. C. Smith, Chairman of the Gas Council. The Hon. Secretary, Mr. W. P. Rae, read apologies for absence, and the minutes of the last annual general meeting were taken as read. It was intimated that nine new members had been admitted to the Circle, and that they had lost one member, Mr. E. V. Chalmers, Peterhead, who died in July of this year. The proposal to alter the name of the Golf Circle and also certain rules was unanimously approved by the members.

Mr. W. C. CAMPBELL, Vice Captain, introduced Mrs. Stanley Bennet, and asked her to present the prizes to the winners.

After the ceremony, Mr. CAMPBELL moved a vote of thanks to Mrs. Bennet and presented her with a gift from the Committee and members of the Golf Circle as a token of their appreciation.

The Captain moved a vote of thanks to the Glasgow Gailes Golf Club for the use of the course.

Mr. W. C. Campbell was elected Captain of the Circle, and Mr. L. Gardner, Vice Captain. Mr. J. E. Couper was elected to fill the vacancy on the Committee. Mr. W. P. Rae was unanimously re-elected Hon. Secretary and Treasurer of the Circle, and Mr. D. Fulton and H. Aitken, Auditors.

Ladies' Golf

The Ladies' Golf Club held their competition on the course of Largs Golf Club (Kelburn) on Wednesday, September 10, when the Handley Salver and other prizes were competed for. The results of the competition were:

Winner of Handley Salver and 1st Handicap prize, Mrs. Congalton,79 less 20=59; 2nd Handicap, Mrs. W. Campbell, 83 less 22=61; 3rd Handicap, Mrs. D. Melvin 77 less 15=62. Captain's prize for best scratch score, Mrs. L. Fletcher, 73. Hidden Holes prize, Mrs. D. Burns.

Bowling Club

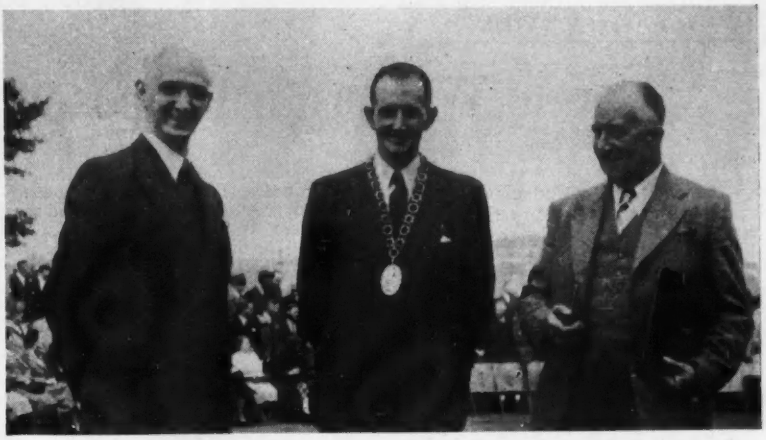
An enjoyable afternoon was spent on the Douglas Park Bowling Green, Largs, on September 10, when a large number of members and visitors took part in the Autumn Bowling Competition. During the afternoon Mrs. E. G. Smith, wife of the President of the Scottish Association of Gas Managers, was At Home to the ladies and later she presented the prizes to the winners. Sir Andrew Clow, Chairman of the Scottish Gas Board, took part in the competition and was in the winning rink.

The Bowling Trophy was won by the following rink which was 13 shots up:—

1. J. G. Rutherford (Skip).
2. C. Wilson.
3. Sir Andrew Clow.
4. T. Shearer.

Second prizes were won by:—

1. R. Meikle (Skip).
2. C. Balfour.
3. J. Scobie.
4. G. McNair.



E. G. Smith, President of the Scottish Association (centre), with G. E. Currier, O.B.E., President of the Institution of Gas Engineers (right) and J. T. Haynes, Senior Vice-President of the Institution.

At the annual general meeting in the clubhouse afterwards, Mr. J. Wilson was elected President for 1953. It was also agreed to change the name to the Scottish Association of Gas Managers' Bowling Club.

Reception and Dance

A happy evening was spent by the members and their ladies and friends at the reception and dance which was held in The Moorings, Largs, on September 10. The guests were received by the President, Mr. E. G. Smith, and Mrs. Smith, and the Chairman of the Scottish Gas Board, Sir Andrew Clow, and Lady Clow. The large company included the Chairman of the Gas Council, Colonel H. C. Smith and Mrs. Smith; and the President of the Institution of Gas Engineers, Mr. G. E. Currier, and Mrs. Currier.

Excursion

The annual excursion took the form of a cruise from Largs in the 'Duchess of Hamilton.' Lunch was served on board and in the afternoon the party spent an hour on shore at Whiting Bay, Arran, before returning to Largs.

University of Leeds

GRADUATES from the Department of Coal Gas and Fuel Industries with Metallurgy in the Degree Examinations, July, 1952, were as follows:—

Ph.D.:

Peter Howard.—For a thesis entitled 'A Study of the Stability and Ageing of Aluminium Oxide Suspensions with Reference to Slip-Casting.'

Asim Kumar Sarkar.—For a thesis entitled 'A Study of the Properties of Producer Gas Tars.'

B.Sc. with Honours in Gas Engineering:

Class II.

Colin James Bullock.—For a thesis entitled 'The Catalytic Transformations of Silica.'

Alan Frank Wilson.—For a thesis entitled 'Town Gas Interchangeability and the Flame Hardening and Tempering of Wire.'

B.Sc. with Honours in Chemical Engineering:

Class I: William Kaye Greenhalgh.

Class II: John Luckins, Philip Clive Pinder, John Desmond Wilcock.

B.Sc. with Honours in Metallurgy:

Class II: Ronald Elliott, John Heslop, John Moser Porter, Francis Bernard Teanby, Donovan Michael Wainhouse.

B.Sc. in Gas Engineering: William Eric Howard King.

B.Sc. in General Fuel Science: Edwin William Fargus, Peter Gordon Jackson.

Post-Graduate Diploma in Gas Engineering: Kevin Redvers Hall, Wilfred Merrett, Charles Ryder.

Upward Trend Flattened

FOR the year ended July 27 gas made available by the North Western Gas Board in fulfilment of public demand amounted to 81,427 mill. cu.ft., showing an increase of 0.5% over the figure for the preceding 12 months. During July gas made available was 0.1% less than in July of last year.

Since the war up to the present year there has been an annual increase in gas sales of some 4½%. This upward trend slowed down towards the end of last year, and then for a time was reversed. Now gas supplied appears to be running at much the same level as last year.

In April and May of this year the monthly figures were about 4% less than in the same months of last year, so that the July figures indicate a rally in demand.

Sales of gas appliances by the Board have fallen sharply, and at £3,946,846 for the year ended June 30, 1952, were 8% less than in the previous 12 months period. During June appliance sales were 18½% less than in the same month last year.

The Transactions, 1948-49, of the Institution of Gas Engineers, covering the proceedings of the Institution during the presidential year of Mr. Edward Crowther, have been published.

CONSULTATIVE COUNCILS

South Western: Proposed New Tariff

THE South Western Gas Board is to consider introducing a new tariff to benefit non-domestic users of at least 1,000 therms each quarter over a period of three years. Anyone not reaching the guaranteed minimum of 1,000 therms in any quarter would again pay the basic rate and would not (according to the draft proposal) be able to rejoin the new tariff group for three years. The South Western Gas Consultative Council discussed the proposal at Taunton on September 10 and approved of it in principle, subject to the three years re-admission period being reduced at the discretion of the Board in special circumstances.

Elastic Conditions

Mr. W. N. Curtis, Secretary and Solicitor to the Board, who took part in the debate, said he would advise the Board that it would be appropriate to make a proviso to that effect. He pointed out that a consumer could, if he wished, continue to pay for the guaranteed minimum, rather than drop out of the group. The Board had made the conditions as elastic as possible. Those who could benefit from the new tariff were about 3% of the total of 650,000 gas consumers in the area. They were a comparatively small, but very important, section. Purely industrial consumption was about 12% of the whole.

Mr. A. W. Loveys, Chairman of the Consultative Council, said the special rates would give real encouragement to expand the use of gas in industry, despite increasing competition from other fuels. The Board had always available a team of experts in industrial matters to advise on the efficient use of gas. One consumer had been shown how to save as much as 10% without any loss of output.

Mr. H. Morland (Glastonbury) said the Board had done a very good job, but he did not like the suggested three-year re-admission period. If industry met bad times and had to curtail output, all discounts on the new scheme would disappear. It would be like hitting an industry when it was down.

Board Should Take Risks

Alderman F. D. Newcombe (Exeter) thought the Gas Board tended to create the feeling that it was nervous of putting in new plant to meet bigger demands likely to arise from the new tariff. The Board should take a certain amount of risk, as all manufacturers had to do, in producing at competitive prices. It ought not to impose conditions and penalties that made it difficult for consumers.

Alderman H. Dodgson (Weston-super-Mare) remarked that in a nationalised industry they had to take the minimum of risk because if it fell down the small person—the domestic consumer—would have to bear the burden. Another member said that as a nationalised industry the whole of them would bear the burden. He thought the Gas Board was inclined to be too conservative over this matter. It should be prepared to take a little risk and give the general public more scope. The public considered that many charges were too high.

The Council decided by 10 votes to 3 against the admission of the Press to meetings of the 11 local committees in its area. The Chairman said 10 out of the 11 local committees had expressed their views and only two favoured in any way admission of the Press: they thought it should be left to the committees themselves whether the Press were invited or not. A member said the object of the local committees would be stultified if their views on certain matters were reported in the Press before they could come before the Consultative Council.

Southern: Coke Sales in Small Quantities

COKE in small quantities of 28 lb. will be purchaseable during the coming winter only by people who themselves call at the gasworks for it. This was reported by the Chairman, Alderman J. W. Moore, at a meeting of the Southern Gas Consultative Council at Reading on September 3. Alderman Moore said the Southern Gas Board had decided that it would continue to supply coke in small quantities at places where there were gasworks, but where works had been closed down and it would entail sending coke from another area the Board would not be prepared to do this unless there was a very severe winter and it was considered absolutely necessary.

There was nothing to prevent the local coal merchants who dealt with coke from selling in small quantities. As a matter of fact, the Board hoped they would, and he hoped it would be made economical for them to do so. A member said the larger coal merchants might be able to do this, but he did not think the smaller merchants would find it economical.

Pram Transport

The Chairman remarked that there were two sides to the matter. One education authority had asked that the children who attended with old perambulators and the like for small quantities of coke should not be served, as they were kept away from school to fetch this fuel.

The question of differential tariffs for industry was raised in a letter from the Aylesbury and District Bakers' and Confectioners' Association, who complained that an agreement made before nationalisation had been cancelled by the Southern Gas Board.

The Chairman pointed out that the Council had already discussed this matter on three previous occasions, and had decided that they must support the Board in this matter of preferential tariffs.

Mr. H. P. E. Mears asked whether the Council were there to serve the Gas Board or the consumers? He added that he thought the bakers had a good case. He himself was a member of the cinematograph industry, who had asked that a pledge given before nationalisation should be kept. The bakers were given a promise in common with other people in regard to preferential tariffs. He asked the Council to take the long-term view of this matter. If the bakers curtailed their use of gas and converted to oil, if the cinema industry did the same, if a dozen other industries went over to oil, there would be less production of gas and the cost of production would be proportionately higher. That would mean that the ordinary consumer would have to pay more for gas in order to keep this large industry going. He thought the gas industry would be facing difficult times in the years to come. Mr. Mears claimed that the cost of gas was three times what it was before the war.

Question of Fairness

The Chairman said that the statement in regard to the cost of gas being three times what it was before the war was not correct, although it might not be so low as some people would like it to be. If they agreed to the price being lower for these people, it would have to be increased to the remainder of the consumers. It would not only be the bakers and the cinema exhibitors who would want preferential tariffs; other industries in the area would also like them.

Mr. J. Thomas submitted that the Council were concerned with all the consumers, and not with one or two industries only. The biggest aggregate users of gas were the ordinary housewives.

The Chairman said in his view in the not too far distant future they would have a national fuel policy, and he thought long term consideration would be obtained with that policy.

Mr. H. R. Metcalf thought this was not the time for the Board to change its policy, but he did think they would be wrong to believe that preferential rates for big consumers would have to be charged at the expense of other consumers. He had had 30 years' experience of the gas industry. Before nationalisation their policy was to

supply the big industrial works at a preferential rate. The larger the output they could get for industry, even at the lower rate, the cheaper would be the cost of production, and therefore they would get a cheaper general rate for gas.

This was not the whole question, he knew, but it was wrong to say that cheap rates for industry necessarily meant that the rest of the consumers must suffer. In the past that was not so.

The Chairman said the Board had evidence that some gas in the Southern Gas Board area was being supplied at less than the cost of production before nationalisation. The Board had to make sufficient profit to pay the interest on the capital invested. If they charged a lower rate to some consumers, they must compensate themselves by getting higher prices in another direction.

A resolution proposed by Mr. N. W. Gardiner that the Council adhere to its previous decision to support the Southern Gas Board in its present tariffs was then carried, Councillor Mears being the only one to vote against it.

During a discussion on the charges made to a certain council for street lighting, Councillor Mears remarked that it was astounding how successful the old companies were before nationalisation, although they were supposed to have been almost giving the gas away. He wondered how they got along so well.

Better Lamp Posts

At the invitation of the Ministry of Transport, the Council of Industrial Design has assumed responsibility for maintaining a list of approved designs of street lighting columns available for consultation by local authorities and other interested organisations.

The Council has appointed a committee to approve designs submitted by manufacturers. Its main object is to improve the day-time appearance of of lamp posts, but it hopes also to have a good influence on functional aspects. It therefore works with the Ministry of Transport, the Road Research Laboratory, the Association of Public Lighting Engineers, and the British Standards Institution.

Since its recent formation, the Committee has received 100 new designs from manufacturers of which it has approved 48 and referred 52 back to the manufacturers with recommendations for improvement.

The Council's industrial staff is available to manufacturers for advice before making submissions to the committee. Most manufacturers take advantage of this and a number have employed consultant designers on the Council's recommendation.

The committee aims to extend its interest to all kinds of street equipment, and for this purpose a section of Design Review, the Council's photographic index of good current British products, has been opened for street equipment (such as bus shelters, outdoor seats, bollards, and litterbins). Approved street lighting standards are included in this list.

News in Brief

Taunton Industries Fair.—Gas cooker sales by the South Western Gas Board at the Taunton Industries Fair totalled 77, not seven, as reported last week.

Scottish Gas Board Headquarters.—The address of the Scottish Gas Board has been altered from 6, Randolph Crescent, Edinburgh, to 26, Drumsheugh Gardens, Edinburgh, 3. The telephone number remains as before, Edinburgh 34331/5.

Gas Casualties.—A gas leak has been discovered to have been the unusual cause of the death of two sycamore trees forming part of a picturesque avenue at Keighley. On going to Keighley after the war, Mr. T. L. Ashton, Parks Superintendent noticed that one tree in the avenue was missing. In time the two trees on either side of the gap deteriorated. Mr. Ashton asked the Gas Board to carry out a test, which revealed a leak of apparently fairly long standing. The trees were at least 40 years old.

The Gas Turbine Department at the Rugby works of the English Electric Co. is to be transferred to factory space at Whetstone near Leicester. In a statement the Company says: 'Consequent on the concentration of the National Gas Turbine establishment at Pyestock, in Hampshire, certain shop and office accommodation has become available at the Whetstone factory of the establishment. 'This space has been leased to the English Electric Co., Ltd., for the development and manufacture of industrial and marine gas turbines and ancillary equipment. This will entile the transfer of the gas turbine department of the Company from Rugby to Whetstone, affecting about 60 workmen.'

Purchasing Officers' Association.—The 21st National Conference of the Association will be held in the Royal Hall, Harrogate, on October 2-4.

Probus House, Nottingham, has been opened by the Lady Mayoress of Nottingham, Mrs. L. H. Willson. Probus House has been converted into six flats for members of the Nottingham Business and Professional Women's Club. All the kitchens in the flats are fitted with an Ascot 503 sink heater.

British & Dominion Process Engineering, Ltd.—Due to certain difficulties regarding the title of this company in Canada, the name of the new company formed jointly by Dominion Wheel & Foundries, Ltd., of Canada, the Balfour Group of Companies of Leven, Fife, and W. S. Barron & Son, Ltd., of Gloucester, has been changed to: Dominion, Scott, Barron, Ltd. Their address will be: 171, Eastern Avenue, Toronto, 2.

First Aid at Cambridge.—At the invitation of Mr. Hunter-Rioch, General Manager, of the Cambridge division of the Eastern Gas Board, a large gathering witnessed first aid competitions which took place at Cambridge recently. The competition was open to all gasworks teams and was in the nature of an eliminating contest to select two teams to represent the division when the Eastern area competitions take place. After a keen display Bedford were adjudged the winners, followed by Peterborough with another Bedford team third and Cambridge fourth. After the judges had commented on the manner in which the teams had acquitted themselves, the Deputy Mayor of Cambridge (Alderman H. O. Langdon) presented plaques to each member of the winning team.

Company News

BELL'S ASBESTOS

The directors of Bell's Asbestos and Engineering Co., Ltd., have declared an interim dividend of 15% (9d. per share) less tax on the ordinary shares of the company, payable October 29.

W. H. DEAN & SON

W. H. Dean and Son, Ltd., are supplementing their final dividend, unchanged at 25%, with a bonus of 5%, to make a taxable total of 40% for the year to August 13, 1952, against 35% last year. Net profit is £64,231, against £52,079, after taxation of £70,748 (£53,357). To general reserve is placed £30,000 (£15,000) and to pensions £5,000 same). The Company is dependent on its steel allocation to maintain full production and the preliminary figures suggest that supplies have been less difficult than they were in the previous year. In the past, demand for the Company's products have exceeded supply.

NICO LIGHT ENGINEERING

The 49th annual report and accounts of the Nico Light Engineering Co., Ltd., show a trading profit of £53,085, compared with £37,583 for the previous year. After allowing for depreciation, taxation, and all charges the net profit was £13,308, against £9,622, to which has been added a balance of £7,454 brought forward from the previous year, making £20,762, out of which the Directors have transferred £4,000 to general reserve and £4,000 to building reserve. The Directors, recommend a dividend of 10% and a bonus of 10%, making 20% less tax and leaving £7,079 to be carried forward. The Chairman, Mr. R. E. Green, in his statement issued with the accounts, says the factory is fully employed with the volume of orders still maintained, and unless anything unforeseen happens the Company should again have a successful year. Thanks are accorded to the staff and workpeople for loyal co-operation and hard work.

Industrial Gas

By ALEXANDER BUJNOWSKI, M.C., O.St.J., M.Inst.Gas E., A.M.I.H.V.E., M.Inst.F., M.S.M.A.

From a paper to the Scottish Association of Gas Managers, Largs, September 11, 1952

THERE are, I think, good reasons for an immediate, critical examination of industrial gas utilisation. Firstly, there has been much written and considerable discussion regarding a national fuel policy. Actual evidence does not reveal much proof of any considered or co-ordinated plan. On examination, we find, only too often, that fuels are used outside their particular economic sphere. This, at the present time, is serious. When we consider that the gas industry can process coal at a works efficiency of 74% and upwards, then surely, sooner or later, our real contribution to national fuel economy must be realised and applied in the fullest sense. Each fuel has its own economic field of application, but until this is realised and there is positive direction in the matter, no national fuel economy plan can be effective.

Secondly, gas has made and can still make a much greater contribution to Scottish industry. For various reasons this field has not been fully explored. As I hope to show, there is a considerable potential. At the present time the Scottish industrial load is 26.54% of the total gas sold. This could well be investigated with advantage.

Thirdly, in my opinion, we shall have to look largely to industrial sales for future expansion. In the domestic field we are having, and will have, difficulty in increasing, perhaps even securing, the load. This is not due to thermal efficiencies, but to factors outside the scope of this paper. A critical examination of the fuel services position in the present and future housing programmes will be revealing.

In a recent survey, I found that the analysis of the potential increase in gas sales in the Glasgow gas area was as follows:

(a) Domestic	7.75%
(b) Central heating	8.75%
(c) Industrial (including commercial) ...	83.50%

When it is considered that this increase represents 7,000 mill. cu.ft. per annum, there is justification for particular attention to industrial gas sales.

Competition from Oil

Fourthly, in addition to what I have said already regarding competition in the domestic field, there is immediate and strong competition in the industrial field. Electricity is proving a real competitor. Many applications are being explored at the present time. The gas industry must be prepared to meet this, and from our experience we can present a very favourable case where economic heat service is required. Now oil has come to the fore. Fuel oil can offer most of the advantages of gas firing, and in many cases can replace gas with little alteration or modification to the equipment. The lighter fraction oils can be applied to smaller units and are capable of effective temperature control. The heavier grades, however, can only be used in larger units, and have not the flexibility of gas firing. Storage is required, frequently pumping, on occasion heating, and there is high wear and tear of the refractories. However, at present prices the effective cost of oil is, in very many cases, lower than the appropriate gas prices. Where prices are competitive, as in many cases they are, there is real danger of our losing loads to oil in the following applications: Baking, heat treatments, metal melting, glass melting, pottery firing, and space heating.

In the Glasgow district 26.42% or 893 mill. cu.ft. of the industrial load is used in engineering, and 15.69% or 530 mill. cu.ft. is used in baking.

While every effort is made to obtain constant, consistent loads, it must be borne in mind that many industrial loads are liable to variation on account of:—

(1) Alterations in demand.
(2) Changes in production methods.
(3) Changes in type of product (peace and war).
(4) Atmospheric changes.
(5) National economic situation.

These variations are particularly noticeable in Glasgow. When conditions change from peace-time to re-armament or war-time programmes, these altered conditions are at once reflected in our industrial gas figures. The diversities, or variations, which are encountered can cause supply and distribution problems. While the curves are similar throughout the year there is considerable diversity which could be improved with advantage to the distribution load factor. In his presidential address to the Institution of Gas Engineers, Mr. Dyde made reference to the American practice of 'interrupted supplies' or 'dumping'—that is, supplies at off-peak periods. While this is appreciated, and very desirable, at the moment it is just not possible. The complete output of the Glasgow works, and coke oven supplies, is taken to capacity at the present time. On occasion the demand exceeds the supplies. Any gas which might be available to level out the load has been required to meet peak demands. There is no doubt, however, that planned industrial gas sales can contribute largely to improved load factors and distribution conditions.

Recent Installations

It may be of interest to have some general details of recent typical Glasgow installations. I have selected a number which I think will provide a representative cross-section.

Pottery

A recent installation of a Dressler open flame tunnel kiln was built by Gibbons and has proved most satisfactory. It is fired by town gas and the results have exceeded expectations. Some trouble was anticipated due to sulphur, but this has not materialised, with the result that there is greater freedom for the firing of glazed ware. The tests made have been entirely successful and it is now possible to fire glost coloured ware, biscuit, and Bristol ware on the same truck. This latest development has proved so effective that it has enabled the consumer to dispense with the old bottle type oven fired with washed trebles. The result is a saving of £6,000 per annum. Three operating temperatures can be obtained on the trucks, top 1,250°C., middle 1,140°C., and bottom of the truck 1,030°C. The hourly gas rate is 3,100 cu.ft.

For smaller applcations there are some efficient gas-fired kilns eminently suitable for technical schools, art departments, and small private potters.

Galvanising

Gas is becoming increasingly popular in the galvanising trade, and in Glasgow is replacing other fuels. I quote from papers read at the conference of galvanisers held in Dusseldorf in July of this year.

'A serious disadvantage with coal or oil fuel is that the combustion temperature is too high to permit the direct application of the source of heat to the flues adjacent to the galvanising bath, and that, therefore, a remote combustion chamber and an expensive re-circulating system for the products of combustion are required.

'A further disadvantage of coal is that ash and other solid particles are swept around the system, and either coagulate

to interfere with the gas flow or adhere to the bath sides and interfere with the heat transmission, which results in a progressive deterioration in performance and necessitates periodic cleaning. Coal-fired installations require constant attendance for stoking, removal of ashes, and cleaning of fire-bars.

'The difference in cost of gas per therm can be more than offset against the other fuels by its ease of control, flexibility, dependability, consistent quality, and the fact that it requires no attendance if suitable temperature control equipment is installed.'

It was also stated at this conference that town gas provided the following advantages:—

(1) Close automatic temperature control of both the flue temperature and the bath temperature can be achieved.

(2) Bath life is prolonged because of the uniformity of heating.

(3) Dross formation is reduced to a minimum on account of close automatic temperature control.

(4) There is a complete absence of dust or products of combustion around the working space.

(5) There is easy access to firing equipment for inspection and maintenance.

Working Conditions Improved

I would also submit a statement by the managing director of a very progressive firm of galvanisers in Glasgow. This firm galvanise for the trade and the work includes shipbuilding requirements, structural work, sheet iron tanks, castings, wire work and nuts, bolts and washers. The bath is 18 ft. long, 4 ft. 6 in. wide, and 5 ft. 6 in. deep. It has a surface area of 81 sq. ft. and contains 80 tons of zinc.

'Compared with a coal or coke fired bath many savings are effected.

(a) No expense in cartage of coal to the works or ashes from the works is required.

(b) No furnace repairs are required. The bath has been in operation two years and nine months and there has been no expense for bricklayers, firebricks, or refractory materials.

(c) As no furnace is required no time is lost while furnaces are being rebuilt and the bath brought to a working temperature.

(d) Owing to temperature control and no hot spots, as always occur with other methods of heating, the production of residuals has decreased about 15%, allowing more metal to be used in coating material and the life of the bath should be increased considerably.

(e) The squad at the bath work continuously. No time is lost in firing or clinkering furnaces.

(f) Working conditions are greatly improved and a much better class of labour is being attracted to the trade.

The figures for the last three years are as follows:—

	Throughput		Average Gas per Ton Working Period	Average Total Gas per Ton
1950	2,700 tons	=	5,672 cu. ft.	7,209 cu. ft.
1951	2,309 tons	=	5,055 cu. ft.	6,172 cu. ft.
1952 (5 months)	920 tons	=	5,074 cu. ft.	6,239 cu. ft.

The cost of gas as against coal, per ton galvanised, is slightly more but is more than offset by the above economies.'

Catering

The recent kitchen installation in the Union of Glasgow University is a good example of gas service. During term, 1,000 to 1,250 main mid-day meals are served to the student members of Glasgow University Union from 12 noon till 1.30 p.m. The menu offers a wide choice, the students having a selection of at least 10 main dishes. In addition to this mid-day service, an all-day buffet service is in operation commencing at 8 a.m. for usual light refreshments. In an establishment of this nature there are many other functions and the whole combines to make a very specialised demand on the catering facilities.

The main kitchen measures 53 ft. × 30 ft., with additional subsidiary rooms for cold storage, vegetable preparation, and pastry baking. Within the main kitchen the cooking equipment comprises two Main island suites, having preparation tables and working tables sited between the suites and along one main wall. The general cooking is done in a six oven gas-heated central range with bain marie at one end and central pot rack over. This unit, together with a 36 in. double grill and a stockpot stand, forms one complete bank of equipment. The other island suite comprises one battery of seven steaming ovens, two 40 gal. steam jacketed boiling pans and four deep fat fryers. Over each central unit is fitted a canopy leading to the ventilation trunking.

The service arrangement is of the cafeteria style, the students entering from the dining room, collecting their trays *en route* and their meals from a 22 ft. steam-heated cafeteria counter. (Cooking equipment by R. & A. Main, Ltd.)

Electric Lamp Manufacture

Gas is particularly suited for the manufacture of electric lamps. The process requires flames, and gas is the only fuel which can satisfactorily fulfil the requirements.

The first stage in the process is the production of the flanges. These are cut to size from long lengths of tube by the 'hot cut' method. Gas is used to heat the tube for cutting and also to facilitate the shaping of the glass flange.

The next part of the process is to seal the electrodes into the glass component parts. A 12 head semi-automatic machine is used for this purpose. The seal must be complete as no air must enter the globe. The fusing of the copper clad wire is effected by means of an air/gas mixture. The flames are needle-like and the burners arranged in pairs. These fine flames heat the glass over the requred length and effect the fusion. It is important that the burners are kept in good order as any dirt or soot on the jets will deflect the flames and cause wastage. The flames must be on one plane. After fusing the stems are passed into a gas-heated annealer to remove any strain in the glass. The output of this machine is 480 stems per hour.

Mass Production

The modern counterpart of the above is similar in arrangement but is fully automatic and of greater capacity—1,250 stems per hour. This latter machine is used for the mass-produced lamps, whereas the former is used for special lamps.

Molybdenum hooks are then fitted to the stems and the filament is mounted. The unit is then 'gettered' (treated with a phosphorous combination) and inserted in the globe. The unit and globe are sealed and rare gas is introduced into the bulb. The air is then exhausted, and the surplus glass neck is 'pipped' off by gas and air flames in an automatic machine. The base caps, already prepared with a lining of plastic cement, are heated and fitted to the lamps. The lamps are then ready for testing. The capacity of this unit is 780 lamps per hour.

Fluorescent Lamp Manufacture

Tubing for fluorescent lamps is normally finished in one of two ways:

(a) Either the ends are cut off square and glazed, or

(b) Each end of the tube is suaged down to form a neck smaller in diameter than the body of the tube, the end of the tube still being glazed.

The process section of the Glasgow plant is designed to perform either or both functions. It consists essentially of three sections.

In the first, tubes which are rough-cut are trimmed off accurately to length by passing them over a strip oxy-hydrogen burner and then over a chilled knife. This leaves a clean square cut, but with very sharp edges. This square end is next glazed smooth with slightly rounded edges by passing through gas burners.

In the second section the necks are formed at the two ends of the tubes. This is done by passing each tube into jaws of a horizontal turret, which carry each tube through four working stations at each of which it halts for a few seconds.

In the first station the tubes are pre-heated by rotating town gas burners. In the second and third stations a more intense localised heat is applied again by rotating burners, which are advanced over the end of the tube to a carefully controlled position, so that a specific zone at the end of the tube is heated to exactly the degree, and over the area, required. The end of the tube is thus rendered plastic and is then passed to the final working position where forming rollers are brought down to it and suage the end into a neck of required shape and dimensions.

In the third section the ends of the tube are carefully annealed by passing them through successive town gas strip burners.

If the tubes are required with ends open and glazed only, they are passed through the second section with the forming rollers withdrawn and just sufficient heat to assist in annealing them, the final annealing taking place on the third section; if they are required necked, they are trimmed and glazed in the first section, formed in the second, and annealed in the third.

Control of Gas Supply

Town gas for all three sections is delivered through a Selas compressor at approximately 22 in. W.G. working pressure. The glazing and annealing burners are of the Bornkessel type manufactured by Chance Brothers, pre-mixed gas-air being fed to them through Wilkes mixers, air being taken from a 30 lb. per sq. in. compressed air main supply.

The supply to the rotary burners on the forming section is taken from special venturi type mixers provided with fine setting valves supplied by the makers of the machine. In this case also, air from the 30 lb. per sq. in. compresed air main is utilised and the gas is taken at 22 in. W.G. from the compressor.

In controlling the exact form and dimensions of the neck and shoulders, precise setting of the three fires plays a very important part. The gauge distance between the collars is required to an accuracy of 0.02 in. in a total length of 48 in. The three units together have a consumption of approximately 1,500 cu.ft. per hour. The glazing-and-forming machine is capable of trimming-and-glazing and necking 60 tubes per minute.

The Baking Load

As I stated earlier the baking load in Glasgow amounts to 15.69% of our total, made up as follows:—10.65% for bread baking, 4.05% for biscuit making, and 0.99% for home bakeries. Over 95% of the bread and all the biscuits produced in Glasgow are baked by gas.

Baking is a particularly suitable field of utilisation for gas. In the large bakery with modern conveyor ovens the outputs range up to 113 sacks or 21,000 loaves per day at the rate of 2,730 per hour per oven. The gas rate is as low as 1.26 therms per sack. There is a wide range of gas ovens to suit almost every baker and all classes of the trade.

In Glasgow recently a number of batch type ovens have been converted from solid fuel to gas. With suitable attention to the combustion chamber and flues these conversions have proved very satisfactory and most efficient. A large number of baking plates have been successfuly converted to gas for production of oatcakes, pancakes, scones, etc.

In the baking industry hot water and steam are required. To produce one sack of dough, some 16 gal. of water at a temperature of approximately 100°F. is required. This can be provided by instantaneous water heaters, storage sets, or steam boilers. The hygienic conditions under which this can be provided are ideally suited to the modern bakehouse. Where steam is required, the gas-fired boiler can ensure the complete elimination of solid fuel in the bakery. A particular field for gas is the business where small quantities of steam are required. No other fuel can efficiently provide these loads.

Crumb Drying

An interesting application of town gas for crumb drying is in use in a Glasgow bakery. The plant deals with bread and biscuit crumbs which are used for sausage meat and fish dressing preparation. It is essential, particularly for sausage making, that the crumbs are free from colour—*ie.*, not browned. The initial moisture content of the biscuit is about 14% on the wet basis, and although the ideal would be to produce crumbs which are completely free from moisture, a final moisture content of 4% is considered satisfactory.

The plant consists of a direct gas-fired air heater which is connected by means of a fan and ducting to a rotating drum. The unit air heater has internal dimensions of 1 ft. 9 in. diameter × 5 ft. 6 in. in length and is lined with 4 in. side arch refractory brick. The outlet duct to the fan is 12 in. diameter and is lagged with 1¼ in. of 85% magnesia plastic insulation reinforced with 1½ in. mesh galvanised wire netting with cloth stitched on outside.

The hot gas fan, which is cast iron cased, is rated at 2,500 cu.ft. per min. against 3.5 in. W.G. and is fitted with a 4 H.P. motor on 440 volts A.C. current. The drum is 3 ft. 11 in. diameter and 18 ft. long, the crumbs being fed in automatically from a continuous drag link conveyor running from a storage hopper. A 3 ft. diameter cyclone and dust hopper is fitted at the outlet of the drum. A 3 H.P. motor drives the exhaust fan at the drum outlet and carries flour dust to the cyclone.

The air heater is fired longitudinally by luminous Amal $\frac{5}{16}$ in. bore brass jets fitted to three 1½ in. B.S.P. manifolds, each manifold being separately controlled. The gas flames are directed through tunnels arranged in the front refractory lining, air being admitted by regulating shutters. The mixture of air and products of combustion is drawn from the heater by a fan and passes through the ducting to the rotary dryer. By nature of the internal construction of the drum, the hot gases are brought into intimate contact with the crumbs.

The temperature of the air admitted to the dryer is controlled about 300°F. and the control maintains temperature within a reasonable range. The throughput of the plant is 15 cwt. of dry crumbs per hour. Gas consumption is 1,900 cu.ft. (8.55 therms) per hour average with maximum consumption of 2,400 cu.ft. (10.8 therms) per hour.

Metal Melting

Gas provides such desirable conditions that there is increasing acceptance in the non-ferrous metal industry. The constant uniform qualities of gas cause no contamination of the metal being treated, and avoid overheating and loss by oxidation. Gas-fired crucible furnaces provide ideal comfort conditions for the worker and also protection from the heat. The operation and control is simple and effective.

These furnaces are supplied in three classes—tilting, lift out, and bale out—each having obvious production advantages. The crucible capacities range from 100 lb. of metal upwards. The burner arrangement may be either low pressure gas, or gas and air. In one installation of crucible furnaces in a Glasgow works the gas costs were as low as 0.45d. per lb. of alloy melted.

During the war one of our consumers used 1,000,000 cu.ft.

of gas per day for pressure casting alone. This was for high priority work. The satisfactory performance of these crucibles in the works has resulted in an application for 105,000 cu.ft. per hour or 400 mill. cu.ft. per annum for aluminium melting.

Heat Treatment of Steel

Annealing Forged Steel Rolls

An installation of portable cover furnaces consists of four bases and four covers having internal dimensions of 14 ft. 6 in. long, 9 ft. wide, 5 ft. 3 in. high. Each is suitable for annealing a gross load of forged steel rolls and supports weighing 26 tons. A pre-determined and somewhat involved heat treatment cycle necessitates evening out the temperature in the charged rolls and then heating them to a higher temperature, followed by soaking, cooling, and various other heating, soaking, and cooling periods. The total time of a charge in the furnace can be as much as 200 hours.

The development of this type of furnace was only possible because of the new types of light weight insulating refractory becoming available. For instance, in the hood, use is made of light weight insulating refractory brick which has a weight of no more than 32 lb. per cu.ft. and is coated with a layer of highly refractory cement. The hood itself is constructed of steel plates and structural steel members welded together and provided with lifting lugs. The total weight is not more than 10 tons. Each base has firebrick on the top surface except under the roll supports where carborundum tiles are used because of their extra load supporting qualities. A considerable quantity of insulation surrounds the brickwork which is enclosed in a strong steel casing.

The gas burners, which are arranged on the two long sides of the base, project their long luminous flames vertically, so that in effect they form curtains of flame, the waste gases passing off at each end through ports under the hearth into a central collecting flue which is connected to a steel chimney.

An important feature is the use made of metallic recuperator tubes in the form of thimbles, with inner and outer tubes, so arranged that the air enters the inner tube and passes back through the annulus between the two tubes. The air then passes vertically upwards in a refractory port where it meets the gas. A very high preheat temperature is obtained but the control of the rate of flow is on the cold side of the recuperator and once the air is heated it does not return to the outside of the furnace.

The air and gas ports supplying the burners are not the round type of the conventional furnace, but are rectangular in section and form members of the base structure, which is, therefore, as a result, made exceptionally strong. The design also prevents damage by accident to any of the control valves since they are all protected by the structural steel members, and the furnaces in consequence have a very neat and attractive appearance.

Air is supplied at a pressure of 6 in. W.G. by an electrically driven fan, and apart from the usual temperature control equipment the furnaces are fitted with safety devices, so that if the air supply should fail through a cut in the supply of electricity, or through mechanical failure, a solenoid gas valve will close. Similarly, should the gas pressure fall below a pre-determined limit the solenoid valve will also close and remain closed until opened again by hand.

The gas rates are, for the 'high heat' 800°C., load 20 tons, 2,500-3,000 cu.ft. per hour, and the 'low heat' 600°C., 1,500-1,800 cu.ft. per hour. A feature of the furnaces has been the remarkable temperature uniformity achieved together with very economical performance.

Close Annealing Steel Sheets

A battery of furnaces capable of accommodating sheets up to 3 ft. wide × 18 ft. long and sheets up to 4 ft. wide × 18 ft. long, stacked to a height of 5 ft. is installed at Frederick Braby & Co., Ltd., Glasgow. The complete plant comprises 12 bases and four furnaces, the furnace cover being lifted from one base to another by overhead crane, thus facilitating loading and unloading while the furnaces retain their temperature.

The furnace consists of a fabricated steel cover, suitably lined with special high grade refractory material and fitted with parabolic radiant combustion tubes for the purpose of heating. Each individual heater tube is fitted with a special burner, connections to which are fed from gas and air rails running around the furnace. Air and gas pressures are 14 in. W.G. At the end of the furnace the gas rails are fitted with a flexible tube and coupling for quick connection to gas pipes which are laid on to each base. The gas and air supply to the furnace is automatically regulated by the control valves. These valves are controlled by thermocouples placed in the load being heated and operate through a control instrument.

Operating temperature inside the furnace varies between 710°-750°C., absolute precision heating to within 20°C. being obtained throughout the entire charge. This type of furnace is controlled by a thermocouple located inside the furnace between two tubes. When the side temperature is reached it is held constant until the necessary temperature within the charge is attained, and this is recorded by thermocouples placed within the charge. Then follows a predetermined soaking period with furnace control now switched to one of the charge thermocouples, after which the furnace is removed and the charge allowed to cool in a reducing atmosphere.

Attaining Maximum Output

The load, which varies between 35-56 tons per furnace, is placed on the base plates and remains static throughout the heating and cooling cycle, thus avoiding disturbance of the sand seals. The furnace, after completing the heating phase of the cycle, is removed in a hot saturated condition and placed over the next charge; thus the rate of heating is rapid and maximum output is attained under precision conditions of heating and control for any type of loading.

A battery of this type of furnace is installed at the works of Smith & McLean, Ltd., Gartcosh.

To provide a suitable atmosphere around the charge to reduce oxidation to the minimum, purging gas is introduced under the inner cover and allowed to discharge freely from the other end for some time (approximately one hour) before the furnace is placed over it, and a small flow is maintained during the heating and cooling cycle. This gas is obtained by cracking town gas in a chamber lined with firebrick. The treated gases, after cracking, are subjected to primary dehydration in a tubular surface condenser and pass through a desulphurising unit and a final drying is carried out in a regenerative silica gel unit.

Infra-red Drying

A large amount of work has been done in this field. A tunnel was built to dry the paint on steel railway wagons. The time required for drying was 1-2 days depending on weather conditions. With infra-red this was reduced to 14 min., which completely removed a bottle-neck. The tunnel consisted of 156 unit panels. The success of this particular unit led to the installation of similar units by other industries. These include aeroplane parts, kitchen equipment and metal furniture. The range of possible applications in this field is considerable.

A smaller unit is used for the high speed drying of labels on filled biscuit tins. The tunnel consists of 40 vertical type and 19 horizontal type panels with a wire mesh conveyor belt. The drying time varies from 45 sec. to 3 min. depending on the size of labels and type of adhesive employed.

Steam Raising

Steam raising, particularly in small plants, is yet another application where gas is efficient and economic. There is no other fuel which can give efficient evaporation as low as 16 lb. per hour. The range up to 6,000 lb. evaporation per hour has become popular. These boilers can be used for

central heating in offices, warehouses, and health departments where the hygienic aspect is all important. In one case a gas-fired steam boiler is used for bottle washing in a distillery. The steam is used firstly to heat the cleansing solution of caustic, then the rinsing water, and finally to dry the bottles. In one hour the plant deals with 125 dozen bottles of varied sizes. The evaporation of the boiler is 1,665 lb. of steam per hour from and at 212°F., while the gas rate is 5,000 cu.ft. per hour.

Skin Annealing of Turbine Blades

Two modern salt bath furnaces are installed for the skin annealing of turbine blades. Each furnace consists of a nickel chrome pot 17 in. diameter and 17 in. deep in a well-designed setting. The pots rotate clockwise and contain the salts. The blades to be treated are suspended in the salt and rotated anti-clockwise, against the movement of the pot, which ensures intimate contact. The operating temperature is 1,080°C. Gas is supplied at 3 in. W.G. and air at 27 in. W.G. to sets of 'Thermic' patent concentrated combustion burners. A special mixture controlling device is fitted. The burners are arranged tangentially and the waste gas exhausted by means of a flue. As the pot is uncovered a special exhausting flue removes the fumes. The gas rate is 1,000 cu.ft. per hour for rapid heating and 320 cu.ft. per hour for maintenance. Temperature control is effected by means of an immersion thermostat and Kent 'Multelec' control panel. A radiation pyrometer is also fitted.

Nylon Fabric Setting Machine

The dimensioned setting of textile fabrics in general is frequently carried out by means of a stenter. Cloth is fed to the stenter in a wet or damp state, extended to the requisite width, overfed if necessary to provide room for shrinkage, and dried in a position corresponding to the final required dimensions. The cloth is carried by a pair of travelling chains, one at each edge, and the guide rails of these chains can be made to diverge at the entry and to remain substantially parallel during the drying process. Drying is usually carried out by means of hot dry air projected on to the fabric. The usual means of heating this air is by steam in batteries of pipes, across which the air is passed and raised in temperature. For practical purposes the limiting temperature of the air by this method is about 300°F., which is normally sufficient for drying. Considerable increases in output, leading to shorter lengths of machine, have been accomplished both by raising the temperature to the limit allowed by steam and also by increasing the air velocity where it strikes the cloth.

Certain fabrics, however, particularly nylon fabrics, are set by the application of dry heat. Nylon fabrics enter a short stenter in the dry state and after reaching the requisite dimensions are set by the application of air at a much higher temperature than usual, say, about 430°F This air, which is of too high a temperature to be heated conveniently by steam, may be heated by the application of town gas or electricity. When gas firing is used it may be accomplished either by direct gas burners, circulating the products of combustion throughout the system or, alternatively, by indirect gas heaters where air alone is circulated. The latter method has some advantages when a controlled atmosphere is required in the stenter. For instance, some setting stenters make use of superheated steam as a circulating and setting medium rather than air. This method helps towards avoiding certain oxidation effects.

Flame Hardening

Flame hardening by oxygen and coal gas consists basically of quick heating of the surface to the required temperatures and quick cooling by jets of water, thus hardening the surface but leaving the unheated core of the metal unaltered. The practical application of surface-hardening by an oxy-town-gas flame has been developed by the Gevelsberg firm of Peddinghaus, whose plant is extensively used in Germany and is now being exported to other parts of Europe and the U.S.A. We inspected the plant in Germany in 1946 and were so impressed by the performance that we requisitioned a machine for examination in this country.

There are three main methods of use:—

1. *Progressive Method.*—Where the work remains stationary and the burner with the water quenches moves slowly as hardening proceeds. Alternatively the work may move slowly past the burners and quenches. This is suitable for hardening the working face of such parts as tractor wheels, spurs, helical gears and worms, pulleys, bearing races, cutter blades, clutch plates, and rollers.

2. *Spinning Method.*—In which the work rotates rapidly and the burners covering the whole of the area to be hardened remain stationary. When the correct temperature is attained the burners are extinguished and the heated component is immediately sprayed with cooling water or transferred to a suitable quenching bath. This method is suited to small gears and wheels, small rollers, pins, and localised hardening on spindles.

3. *Combination Method.*—This combines the progressive and spinning methods with the result that the work rotates rapidly, and the burners with the quenches travel slowly in the axial direction. Many types of components are accurately hardened by this method, including shafting, cylinders, pump liners, bushes, and spindles.

The Peddinghaus equipment has the further advantage that it incorporates an electronic, automatic heat control which maintains the surface temperature of the work within fine limits and regulates the mechanical operation of the machine. This device, coupled with the special characteristics of the oxy-coal gas burners, ensures maximum economy, uniformity of hardness, and a noteworthy freedom from overheating, cracking, and other defects, which have hitherto not always proved avoidable by even the most skilled workers.

Peddinghaus flame-hardening equipment is being distributed in Great Britain and the Dominions by Surfard, Ltd., of Abbey House, Westminster.

Industrial Gas Personnel

The present position regarding industrial gas staff is far from satisfactory, and must be viewed with concern.

If the industrial load is to be maintained and developed, this serious problem of shortage must be dealt with at once. There are two aspects to this matter, the immediate or short-term policy whereby the industry obtains personnel already trained and preferably experienced, and the other, long term, would include training and equipping our own staffs.

Regarding the first, the present salaries offered are generally not sufficient to attract suitable engineers and frequently are not comparable with the remuneration offered for similar positions by other fuel industries. In addition to this there is a decided shortage of fuel engineers throughout the country. Then again the prospects are by no means clear. In the other branches of our industry, the prospects are normally well defined. I have had many good students, keen and interested in the industrial side, who preferred to remain where the avenue of promotion was clear. If we want the staff now, then I suggest we offer conditions at least as attractive as those of our competitors.

When we examine the long-term plan it at once reveals the totally inadequate facilities, combined with limited staff, for training. In very few cases is a satisfactory scheme in operation. The majority of industrial gas engineers have invariably many other duties which prevent their taking part in training staff. In any scheme some standard of basic qualification is essential. This might be the Higher Grade of the Institution or an equivalent qualification from a technical college or a university. This would be followed by a suitable period of training which could take approximately five years.

Unfortunately there are no facilities for practical industrial gas work at our technical colleges. During the last few years, as the Lecturer in Gas Supply, I have made arrangements for students to visit and examine industrial gas installations

throughout the session. While this was of considerable interest to the students, and of some value to the industry, it only touched the fringe of the problem. Students do experience some difficulty in obtaining the requisite technical knowledge relative to industrial gas.

I have considerable respect for the Gaswarme Institut at Langenberg, Germany, which we visited in 1946. This is supported by the gas supply industry and appliance manufacturers. The staff consists of well qualified engineers and scientists. The work of the Institute consists of testing of equipment, research, and training of all levels of industrial staff. In addition to this, fuel economy and efficiency and the general development of gas for industrial purposes are undertaken. (Details are given in our Report B.I.O.S. Final Report 1800—Industrial Gas.)

In 1947 we instituted in Glasgow a scheme for the training of industrial gas personnel. Our first pupil has just completed the five years' course, obtained the Higher Grade Certificate in Gas Supply, and proved the success of the scheme. We propose to extend this when conditions permit.

Exhibitions

As Chairman of the Exhibitions Sub-Committee, I feel I must make some reference to industrial gas exhibitions as these are important. Exhibitions of industrial gas equipment and appliances are the media whereby the up-to-date gas picture is presented. These must be approached rather differently from the normal or public exhibitions. First of all, there is an assured attendance of expert visitors. They usually have a particular interest and are very discerning in their approach to economic fuel utilisation. Consequently, whatever is done should be of the highest possible order, and right up to modern standards and requirements. We must ensure that gas is not just taken for granted. Our exhibitions afford the opportunity to demonstrate our ability to provide further and greater service to industry. We, in the industry, know that we are modern, but we must prove this in the most effective way.

Exhibitions can be arranged in two broad classes—general and specialised. One example of the first is the British Industries Fair. In such a case a theme around which the stand can be arranged is very desirable. I feel that this is much more effective and attractive than some stands where a very general range of appliances is displayed with no co-ordinated plan. This year, for example, a double feature was portrayed:—

(*a*) A production line.

(*b*) Foundry equipment.

Some feature as an 'eye catcher' is always an advantage. Live exhibits are always good but require careful treatment. For example, this year at Castle Bromwich there were displays of metal spraying and glass working. I must say in this connection that care should be taken to ensure that the fuel—gas—is not over-shadowed by the process. Every effort must be made to stress the fact that gas is the heating medium. Attendants should be experienced in industrial applications and well briefed in the appliances on exhibition. All literature used at exhibitions should be modern and of good quality.

With special exhibitions such as baking, engineering, shipbuilding, cremation, brewers, etc., if the space taken is small, then the exhibit may take the form of an enquiry bureau. In such a case, photographs, diagrams, and models may well serve the purpose. It is most important that the staff on duty are suitably experienced in the particular application of gas on exhibition.

There is no reason why industrial gas equipment should not be in keeping with modern design. I think we must admit that competitive fuels have gone a long way in visual appeal. In this day of pleasing factory design and amenities it should be our aim to be well in line.

I feel it my duty to pay very high tribute to makers of industrial gas equipment. We can attribute a large part of our load to the research, experiment, and development work of these firms. I think we are all aware of cases where an industrial installation has been initiated, negotiated, and completed by the makers. The primary function of these firms is to make and sell equipment. We must sell the gas and the service. We must ensure that gas is the fuel and in this we have a real responsibility.

Fuel Economy

In view of the need for the continued conservation of fuel it is advisable that everything be done to ensure the utmost economy together with maximum production. This can be achieved by the utilisation of the most suitable equipment, effective maintenance, and operation at maximum efficiency. These can only be achieved by the fullest co-operation with consumers. The real efficiency should be explained by the following equation:—

$$\text{Real Efficiency} = \frac{\text{Total gas consumption}}{\text{Quantity of work heat treated.}}$$

From this it will be seen that the efficiency which is important is the efficiency of production rather than the thermal efficiency of the appliance. Whenever possible appliances should be worked at full load. A considerable saving can be effected by the planning of heats. Careful attention must be paid to operating gas pressures. Correct combustion must be maintained as very considerable losses can result from incorrect air/gas mixtures. Generally speaking, the flue loss becomes a minimum when the CO_2 content is at its maximum. When making these analyses it is most important that the furnace atmosphere is considered (oxydising or reducing).

Highest efficiency figures are obtained when an appliance is operating at capacity. Plan to do all the heat treatment so that the furnaces are working with full loads, and avoid the 'odd job.' This rule applies to all appliances whether baking, metal melting, drying, carburising, and particularly salt baths; it will mean more planning to ensure a steady flow of production, but it will be well worth while.

Equipment should be adjusted to maximum efficiency. This means care and time being spent on every appliance—checking the gas rate and the flue gas analysis. Remember that the flue loss can rarely be less than 20%, and every 1% of excess air means an avoidable further flue loss of at least 3%, while every 1% of carbon monoxide in the flue means an additional potential flue loss of 7%, and, if the gas rate is too high this probably means a total loss of 40% or more. The gas rate and atmosphere required should be ascertained and maintained by regular check and adjustment.

Appliance doors should be opened as little as possible and flue dampers operated correctly.

My experience is that if a dependable maintenance service can be given the dividends paid are indeed great. It is appreciated that a high degree of skill is required and a sound knowledge of industrial equipment and controls is essential. This involves higher remuneration, or special rates. If we intend to develop the load, then I suggest that this important aspect of service be considered.

Costs

The estimated capital expenditure required by the gas industry during 1951 was £40 mill. Apart from the importance of coal conservation, the national capital investment aspect is satisfactory.

Mr. E. G. Smith, in his presidential address to this Association, stated, under 'Load Development and Capital Costs':—

Classification	Load Factor max. days	Capital Cost Therms made	Capital Cost Therms sold
Industrial ..	300	2.95	3.17
Commercial ..	275	3.22	3.46
Domestic ..	220	4.02	4.32

These figures refer to capital production charges. If, with this, we carefully examine the other charges—production, dis-

tribution, service, and administration—we find there is decided advantage in favour of industrial gas. If, for example, we review critically the cost of selling 1 mill. cu.ft. through, say, 50 domestic meters or one industrial meter, all factors considered, I think there is justification for reviewing the tariffs for industrial gas. Apart from this the vexed question of diversity is simplified by the sale of a constant load.

One aspect of gas utilisation to which I would refer briefly is the combination of gas and other fuels. Comparatively little has been done in this field. I have seen an efficient installation in which gas and pulverised coal are used together. There must be other combinations of fuels with gas, perhaps with some of our own by-products. I feel the suggestion justifies some investigation. It might be well to explore the thermal value in practice of all our by-products. If successful, it would result in a more advantageous contribution to national fuel economies.

DISCUSSION

Mr. Robert Cowie (Hawick) said that he sold gas in a part of the country where the staple industry was textiles and the textile trade was one of the lowest in the list of industrial gas consumers. At the beginning of his paper, Mr. Bujnowski had spoken of the difficulty there had been in increasing the domestic load although he was very enthusiastic about the potential industrial load. Surely it was a counsel of despair to talk in such a way of what was the mainstay of their industry—namely, the domestic cooking and heating load. He wondered if they were satisfied with their own efforts and service in connection with the domestic load, because he felt that the potential must be very much hihger than that which Mr. Bujnowski mentioned as applicable to Glasgow. He would like to know how the survey referred to by Mr. Bujnowski had been carried out. In small places like his own he came into close contact with the consumer, and he thought there was much more room for optimism than Mr. Bujnowski had shown. The author also considered the possibilities of using gas in conjunction with other fuels. That had been done in Hawick, where he had substituted gas for coke on occasions, but it had never occurred to him to use gas in conjunction with other fuels, and there might be quite an application there at night or at off-peak periods.

Mr. Bujnowski had discussed the personnel question. There was a time when an enthusiastic gas manager could employ an extra man in order to run a campaign, but that was not so easy now because they were involved in what was called 'The Establishment,' and the district engineer was cramped in that respect.

Mr. Robert Fyfe (Kilmarnock) commented that the information given on the new process of case hardening was particularly interesting. This was a considerable advance on ordinary case hardening, being a speedier and cheaper operation. He assumed, however, that steels used in the process would require to have a relatively high carbon content suitable for hardening or tempering. The physical condition of the higher carbon steel changed when heated to high temperatures, and this condition was retained on rapid quenching, giving the hardened steel. This was generally more brittle, but the new process had all the advantages of quicker, more effective hardening of the bearing surfaces only while the main body of the steel retained its ductility and resistance to breakage under strain. There was a considerable field for a process of this nature in the hardening of such articles as Mr. Bujnowski listed—gear wheels, worms, pulleys, etc.

Mr. J. H. Fulton (Kirkcaldy) remarked that when he contemplated that the Scottish industrial load was 26.54% of the total gas load, he thought that Kirkcaldy, with an industrial load of about 10%, was lagging far behind the average. On further consideration of the analysis of industrial undertakings in Glasgow using gas, however, he was surprised to find that almost half the items listed were normally classed as 'commercial' and not 'industrial.' The classing of such business as industrial was contrary to normal practice, and he wondered why Mr. Bujnowski had included them. Incidentally, if the Kirkcaldy industrial and commercial sales were combined, the total represented approximately 27% of the gas sold, comparable with the author's figure of 26.54%.

Discussing the unattractive salaries offered to industrial gas personnel, Mr. Bujnowski said: 'In other branches of our industry the prospects are normally well defined.' He (the speaker) trusted that the author did not believe that the other branches were satisfied with their prospects. He thought it safe to say that staffs on the manufacturing, distribution, and non-industrial sales sides of the industry also felt with the author that the present salaries offered were frequently not comparable with the remuneration offered for similar positions by other fuel industries.

Regarding tariffs, one problem he had met was this: 'Our Glasgow works get cheaper gas than you offer us. Can't you reduce the price to the same as Glasgow?' How did Glasgow frame tariffs for all in these industries? Was there one tariff for all, or were there different charges for different uses of gas?

Mr. A. W. Brown (Aberdeen) said that the paper was opportune, and probably its most valuable feature was the emphasis placed on the necessity for properly trained and competent industrial gas personnel working as an independent unit, fully equipped, in suitable and adequate premises. The method he adopted in an undertaking with a 25% industrial gas load factor was to cultivate the friendship of the major industrialists in the town, impress upon them the adequacy of the gas supply, their readiness to give supply, and make them familiar with prices. This inevitably resulted in a request for a discussion with a prospective consumer when he was considering an extension or re-design of industrial equipment. It was at this point that information from Mr. Bujnowski was most valuable.

Goodwill and confidence in the gas undertaking was built up, and he found that industrialists in the area, when approaching contractors direct, did so with a definite bias in favour of gas. There were, however, many cases where the problem was not easily solved, and generally that business was lost through deficiency in experienced staff, lack of time to devote to the job, or insufficient information from the industrial centres. In selling industrial gas, the approach was straightforward. The buyer was interested only in costs—*i.e.*, fuel cost per unit of production, and it was essential that the gas industry had personnel to put forward the merits of gas as a fuel, allowing for no misinterpretation of facts in the mind of the prospective consumer.

The author had stressed the potential of industrial gas sales in the Glasgow division, and this was an indication, although to a lesser degree, of the position throughout Scotland. Production plant would become available, and eventually outlets for gas sales to maintain load factors would be required. Industrial gas was one of the main outlets, and no time should be lost in tooling up with personnel and equipment to go all out for the business.

Two-Part Tariffs

Mr. W. C. Campbell (Galashiels) said that the figures given of potential increase in gas sales in the Glasgow area of 7,000 mill. cu.ft., of which some 83% was estimated to be found from industrial gas expansion, might cause a sense of depression in those who considered that such a field of opportunity could not exist in other gas areas not possessing the amount and diversity of industry possessed by Glasgow. A study of the figures suggested that Mr. Bujnowski was unduly pessimistic about the potentialities of the domestic market. On this point he would direct attention to certain figures which he (Mr. Campbell) had given at the last meeting relative to the remarkable increases in consumption by domestic consumers achieved by the operation of two-part tariffs.

It would appear, continued Mr. Campbell, that the author classified all consumption other than domestic under the heading of industrial gas. He proposed to do likewise. In Galashiels, where not so many years ago an industrial market was presumed not to exist, the consumption for industrial consumers rose between the years 1939-49 by more than 600%, to represent 34% of their total sales instead of 11%. Since 1949, industrial sales had increased by a further 15.3% to represent 36% of their total sales. He did not consider there was anything remarkable about their figures, and he was sure they could be achieved in most places and greatly improved upon in many.

Mr. Campbell said this could only be done when they could deliver the right quantity at the right place and at the right price. Of these three stipulations, the latter was the

(*Concluded on p.* 705)

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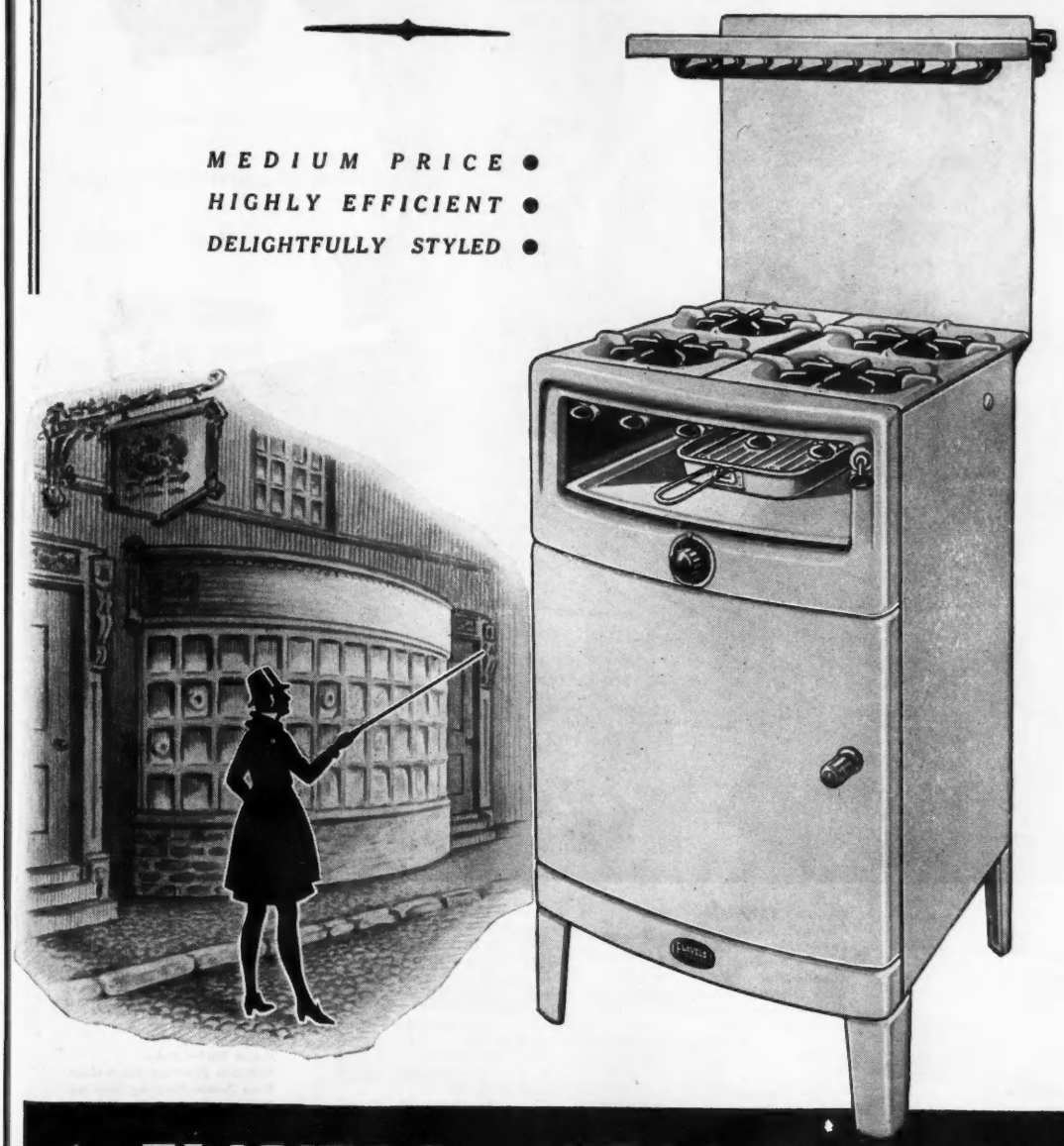

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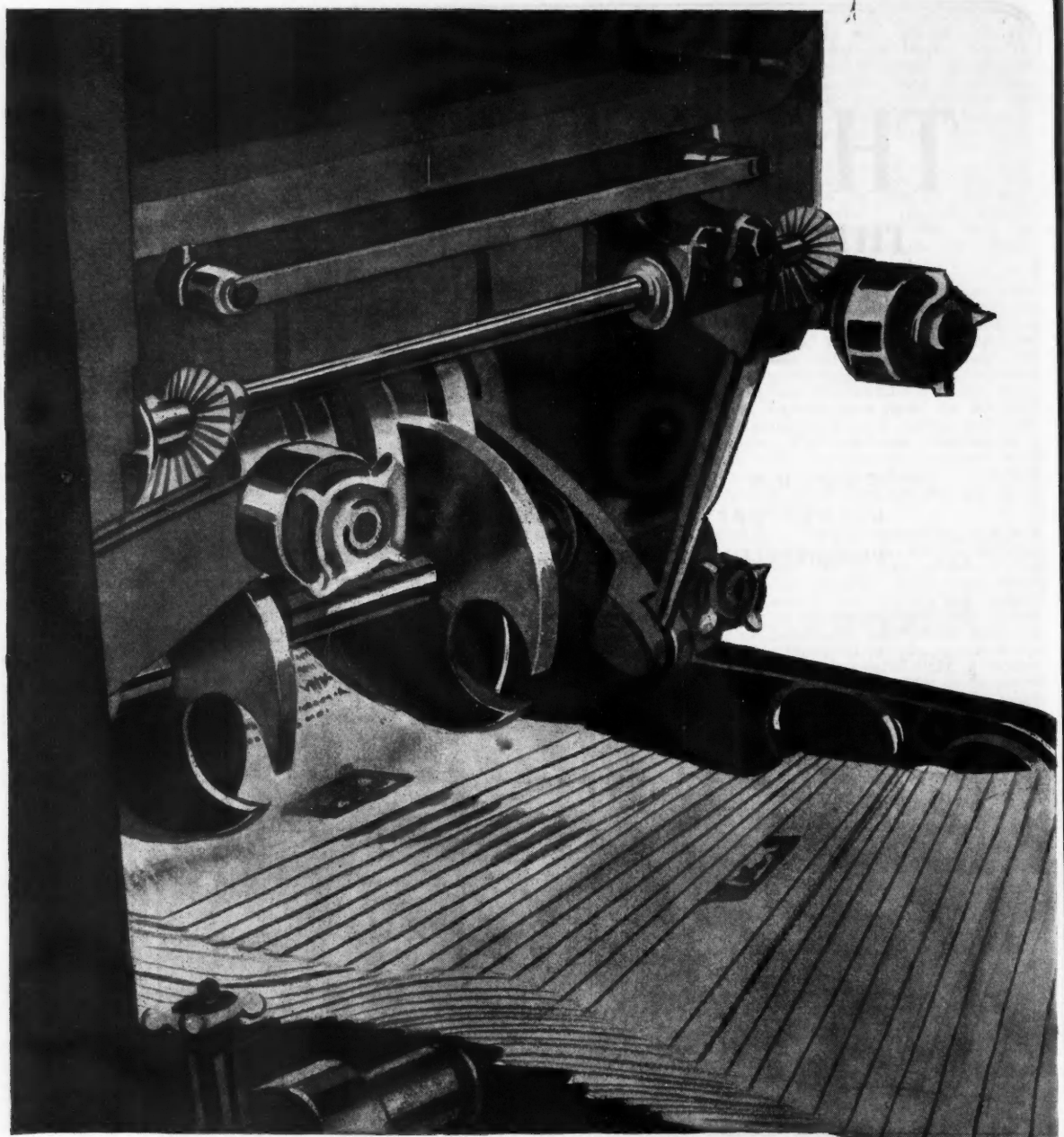

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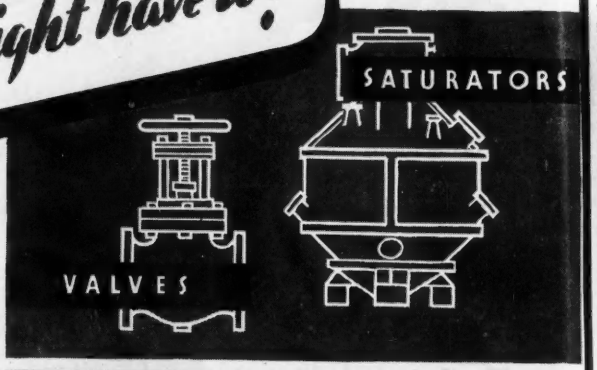

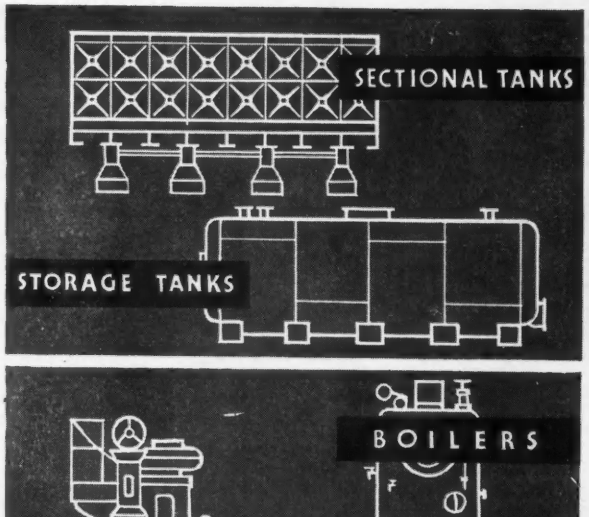

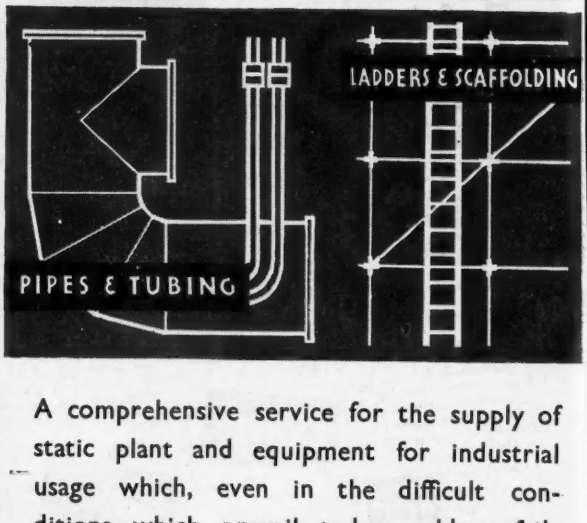

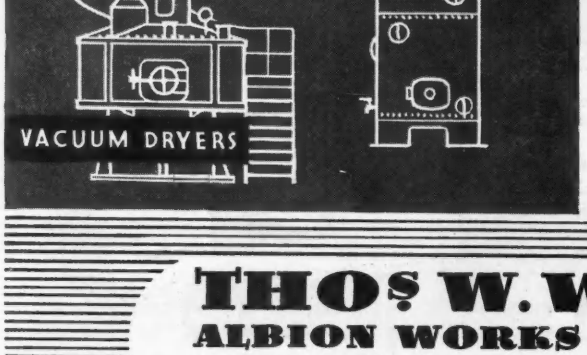

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most important. Possession of the productive plant and distributive equipment was not enough. The right men, with the right brains, were essential if the plant and equipment were to be used to produce at the right price. It was no longer the purpose of the gas industry simply to fulfil the function of selling its products. It had a very important part to play in the economy of the nation. The coal processing industries would become the handmaidens of the people on the one hand, and, on the other, advise and assist industry in all matters pertaining to heat application. In this capacity they would act as unpaid fuel consultants on all problems connected with efficient production of all kinds of materials and goods. They would approach each problem, not as 'gas salesmen,' but without bias, and with no sectional interest, no price cutting to obtain uneconomic loads, no indiscriminate application of gas in cases where fuel cost had little significant bearing on finished product price. He was sure they would be well advised to let electricity, oil, and solid fuel do the work for which they were best suited—and, of course, they must always bear in mind that they considered their industry to be 'two fuelled' and thus in a good position to balance their economy.

He agreed with the author that great opportunities existed for gas in the field of industrial use, but he had an impression that the duties most suitable for gas were those having the most complicated application. If their duty demanded the expansion of gas sales, then, having provided the gas production plant and distribution equipment and the brains to run them, they must also find the brains to run the application and utilisation side. In Scotland they would need fuel technologists, specialising in gas application, to act as advisors to industry, and practical industrial gas engineers to install and maintain equipment. They might also need properly equipped industrial gas centres—one main and two subsidiary. Many of the difficulties besetting this objective were swept away three years ago. Now was the time for action. The industrial load in Galashiels was built up mainly on advice and assistance obtained from the Scottish Gas Industrial Centre. Working together, they designed and built, modified or improvised, a variety of gas equipment for specialised jobs. They rendered considerable service to some small firms and retained their confidence. The average price received for industrial gas sold in Galashiels for the year 1951-52 was 10.41d. per therm, against a total operating cost of 10.99d. per therm sold. For his part he was satisfied with those figures but would try to improve upon them. The Board was providing and would continue to provide him with the tools, and he was confident that together they could finish the job, in so far as the industrial field of application was concerned. The domestic field was a much more complex problem, however, and in this connection he would only say they must be careful not to price themselves out of the market, which was now a highly competitive one.

Concluding, Mr. Campbell said the price of the effective therm of gas and of electricity on the domestic two-part tariff, was now so close that very little increase in price of gas would tip the beam against them. In Mr. Bujnowski's paper it was suggested that as an industry they had reason to congratulate themselves because they processed coal at a works efficiency of 75% and upwards, whereas the best practice in electrical production could achieve only 25%, and yet the price of the effective gas therm and the effective electrical therm were so close. All their energy as an industry should be directed towards improving their production, distribution, and utilisation efficiency, and of these three the last offered the greatest scope for opportunity.

Mr. H. S. Milne (Aberdeen) remarked that Aberdeen had carried out a bakers' oven conversion in 1936 which had proved satisfactory. There was a marked increase of throughput but gas could not compete in price with their own coke—at that time being delivered at 23s. 6d. per ton. The position was different now. He was surprised to find that in the paper there was no reference to the rapid growth of the application of gas to overhead radiant heating. They had been installing these heaters in Aberdeen for the past 15 years and now had more than 1,500 in operation. Initially it had meant hard work to persuade people to install them, but they now found that many heaters were sold on the recommendation of satisfied users, or through people seeing them in use elsewhere. In some cases these heaters had been responsible for the introduction of gas for the first time in industrial premises. It could be argued that radiant heaters tended to increase the winter load unduly, but that was largely a matter to be ascertained and dealt with locally.

Mr. J. Webster (Dunfermline) asked if the laundrettes which Mr. Bujnowski had referred to were used by the public. As far as exhibitions were concerned, these had mainly been held in the West of Scotland where industrial works were more commonly found. Was there any possibility of such exhibitions being held in other areas, particularly the east and north-east? What had become of the projected sound film depicting the work and contribution of the industry in the late war?

Mr. Bujnowski, in reply, said that, as far as the survey was concerned, architects, surveyors, and industrial consumers had been taken into account, and it was based upon a five-years programme. They had two excellent maintenance fitters in Glasgow. In reply to Mr. Fyfe, he could say that the infra-red demonstrations had brought in slightly under 200 enquiries. As far as the flame hardening machine was concerned, it would be on exhibition at the forthcoming Engineering and Marine Exhibition. In reply to Mr. Fulton, in Glasgow they had three rates—(a) domestic, (b) special contract rates for manufacturing consumers who must consume at least 50,000 cu.ft. per annum, the price varying from 14.67d. for that figure to 10.33d. for 100 mill. cu.ft., and (c) non-domestic paying 14.89d.

PRACTICE AND THEORY

At a conference of the Council of Ironfoundry Associations on 'Training for Ironfounding,' the Chairman, Mr. S. H. Russell, said it was obvious that without successful recruitment the ironfounding industry would ultimately die. Unfortunately, recruitment was a long-standing problem, and the time had long gone by when foundries had waiting lists of boys ready to take jobs.

There had been an enormous advance in education from the foundry point of view during his life-time. When he was a young man, except for Birmingham and Sheffield Universities, there had been practically no opportunity of studying metallurgy or any of the more popular forms of applied science generally. A good deal of the credit for the increased interest in education was due to the Institute of British Foundrymen which, throughout its life, had done a lot to foster education from the technical and foundry point of view. It was now the 21st anniversary of the establishment of the City and Guilds of London Institute examinations in foundry work. Since the formation of the British Cast Iron Research Association, Dr. J. G. Pearce had been equally interested in education and had done much to foster it in the industry.

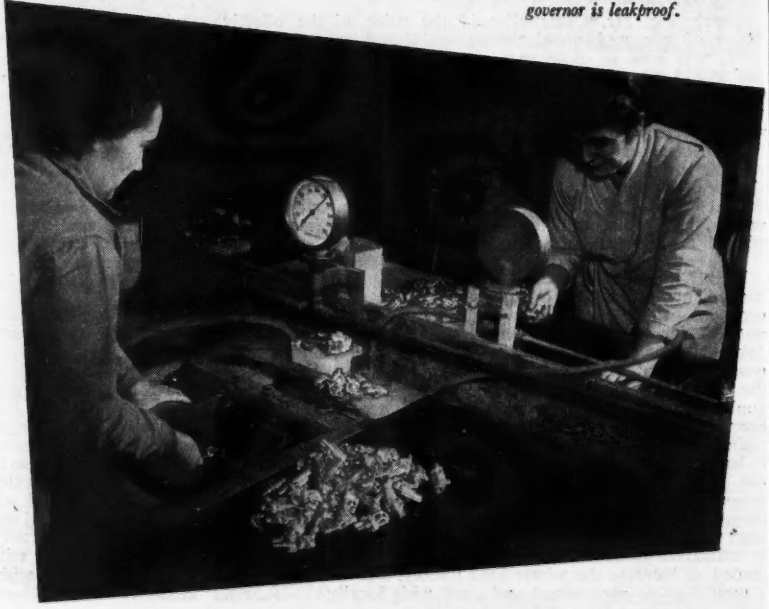
During the Chairman's visit to the United States of America, as a member of the Grey Ironfounders' Productivity Team, one thing which had most impressed him was an interview with the vice-president of a large machine-tool corporation, the Cincinnati Milling Machine Corporation. This man was of the type chosen by President Roosevelt during the war for important negotiations and important planning in connection with the prosecution of the war; and he had referred to a scheme whereby they gave their brightest pupils a university course mixed in with a practical course. The boys spent five years, working half-time in the works and half-time in the university, and the vice-president had said that very few of the modernisation schemes could have been carried out without that leavening of educated men who were in contact with the shops and who knew the men's problems, and who were themselves prepared to work in the shops and yet had the proper educational training which enabled them to see ahead and to overcome the snags.

Merely putting plant into a works was not sufficient. There were instances where modern equipment had actually been taken out of the shops again because the expected production had not been achieved, and in his opinion the fault was to be found mainly in the lack of educated young people, prepared to stick at that plant and make it work. It was his personal conviction that the main difficulty in planning and carrying out schemes of even the simplest forms of modernisation or of increased efficiency in any foundry was the lack of technically-educated young men who were prepared to take off their coats and who understood what could be done. One important essential was that those young men must have good human relations; they must have worked with the workingman, be friendly with him, understand his outlook and able to rub shoulders with him, and the average Britisher with the right spirit would very quickly achieve that qualification.

quality production

Gas Governors for cookers undergoing pressure test. The second operation is an under-water test to ensure that each governor is leakproof.

every single piece of brasswork is given a searching test

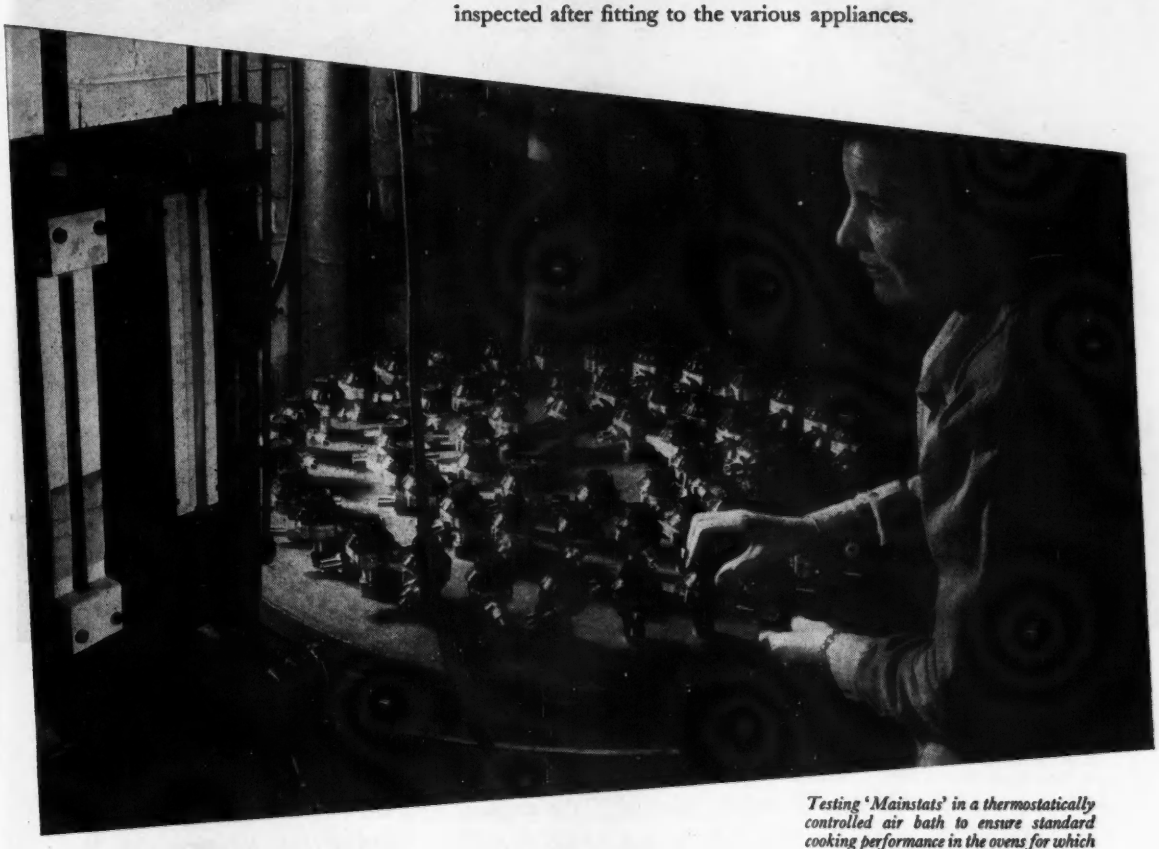


Gas cocks receiving a high pressure test under water. At the slightest sign of a leak, a tap is at once rejected.

R. & A. MAIN LTD • MAIN WATER HEATERS LTD.

IN GAS APPLIANCE MANUFACTURE

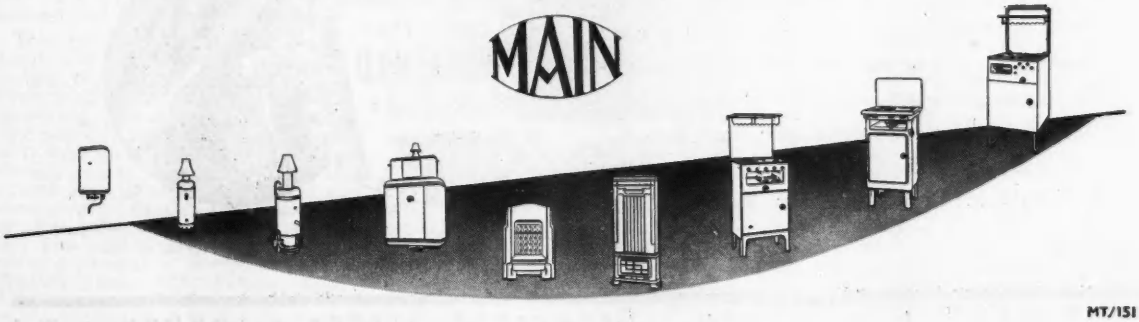
Good quality brasswork plays an important part in the efficient working of gas appliances. That is why each and every piece of Main brasswork is subjected to a searching test with the aid of accurate measuring instruments. Even here, however, the matter does not rest, for all brasswork is again carefully inspected after fitting to the various appliances.



Testing 'Mainstats' in a thermostatically controlled air bath to ensure standard cooking performance in the ovens for which they have been calibrated.

main GAS APPLIANCES

COOKERS • SPACE HEATERS • WATER HEATERS



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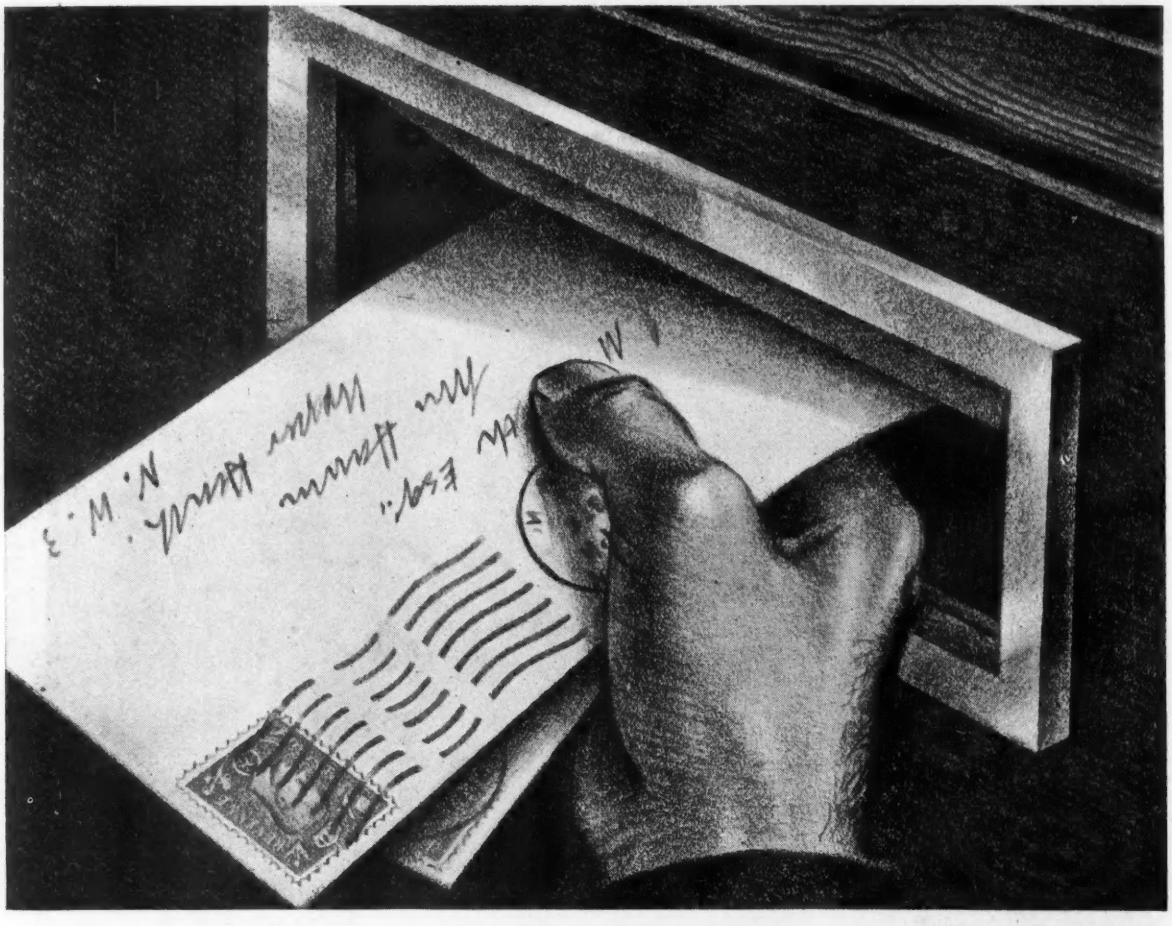


Efficiency that you take for granted...

The postman's double-knock and the plop of the letter on the front door mat are the end results of a long train of events. Sorters, mail vans and mail trains running to split-second schedule, robot operated underground railways, together with all the experimental work post office engineers undertake in a search for greater efficiency . . . all these are part of your early morning delivery... and all you take for granted. Wakefield Industrial Lubricants are the end results of a long train of events. Perpetual research into every aspect of lubrication, unceasing vigilance at every stage of manufacture, 50 years' experience in producing the world's finest oils . . . all these are taken for granted by the engineer who knows from experience that the never-failing efficiency of Wakefield Oils, combined with the full use of their Industrial Lubrication Service, is one of the surest ways to greater efficiency and lower operating costs.

C. C. WAKEFIELD & CO. LTD · GROSVENOR STREET · LONDON · W.1

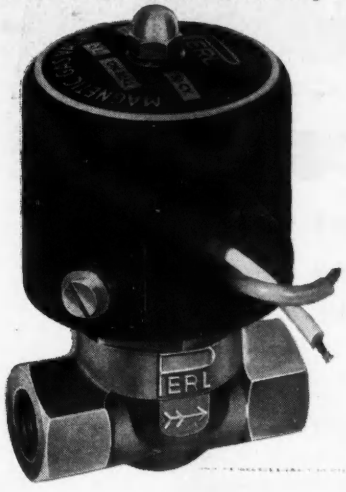
TRADE NEWS

Perl Controls

PERL CONTROLS, LTD., have put into production a new magnetic silent valve (type No. 70). It is a robust, compact plunger type solenoid valve which operates on the familiar solenoid valve principle — *i.e.*, energisation of the solenoid coil attracts the armature which, in turn, lifts the gas valve off its seat; de-energisation releases the armature and the gas valve returns to its seat by gravity. The function of the valve is automatically to cut off the gas supply to an appliance, in response to the action of control instruments wired in series with the solenoid valve. The re-establishment of the electric current automatically reinstates the gas supply.

The solenoid valve is suitable for the control of the pilot burner used in conjunction with electrically operated flame failure controls, such as the flame electrode, and also for general purpose electric control—*e.g.*, thermostatic, fan failure, etc., both industrial and domestic.

At present the No. 70 type magnetic valve is made for ¼ in. B.S.P. gas connection, having a maximum rating of 50 cu.ft. per hour at a pressure loss of 0.3 in. W.G. Similar valves for ⅜ in., ½ in., ¾ in. and 1 in. B.S.P. connections with relative ratings will shortly be available. The electrical consumption of the solenoid unit is approximately 8 watts.



The new 'Perl' magnetic valve.

The 'Perl' magnetic valve is neat in design, and well constructed, and though its operation follows the lines of other similar magnetic valves, the makers have introduced a number of features which they stress. For example, the 'Perl' valve incorporates a shaded pole giving absolute silent operation, while the general construction is such that it ensures complete freedom from sticking in the open position. Metal to metal seatings also ensure long wear, and an earthing terminal is incorporated.—*Perl Controls, Ltd., 672, Fulham Road, S.W.6.*

Recovery & Protective Co.

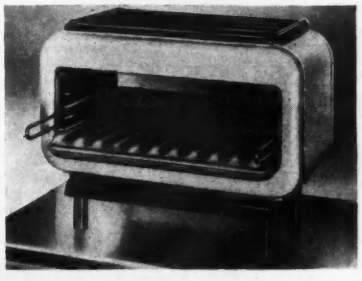
TO reclaim components and metal products from corroded conditions a new enterprise—the Recovery & Protective Co.—has been launched by a metallurgical chemist and a service engineer in partnership.

To launch the Company the chemist, Mr. E. Middlehurst, resigned his position as chief chemist of Jenolite, Ltd., makers of industrial chemicals and experts in pre-treatment and anti-corrosion processes. His experience in corrosion has convinced him that there is a real need in Britain today for a service that will reclaim corroded components. The initial equipment and factory capacity at St. Albans is calculated to handle such equipment as drums, unit containers, fire extinguishers, casings, pressure cylinders, hand tools, motor car parts and spares, canteen equipment, mechanical units, and vehicles.

An advanced form of metal pre-treatment has been developed which has been proved to extend the service life, the sales appeal, and the corrosion-resisting qualities, both in service and during storage and transit, of wide ranges of new units. Mechanical reclamation, often necessary in the course of reclaiming from corrosion, is directed and supervised by Mr. C. Andrews.—*Recovery and Protective Co., 10, Ver Road, St. Albans.*

R. & A. Main

A COMPACT gas griller and toaster, the 'Main' GG225 is attractive in appearance and efficient in performance and will appeal to caterers, hoteliers, and restaurateurs, the larger domestic establishment and those requiring a convenient gas griller to supplement other forms of cooking equipment. The 'Main' GG225 has been designed to facilitate convenient siting and to give rapid, even toasting and grilling. Reasonable in cost and economical in use, it is suitable for use with either town or butane gas and is available in either cream or grey dapple vitreous enamel finish, with black acid-resisting enamel top plate. It is designed for direct mounting on to table or counter, and is also supplied on 4 in. table stand or 36 in. high stand. By use of a special cast iron, black enamelled separator plate it may be installed in double-tier formation and built into battery form as required.



The Main GG 225 griller and toaster, single unit table model on counter stand.

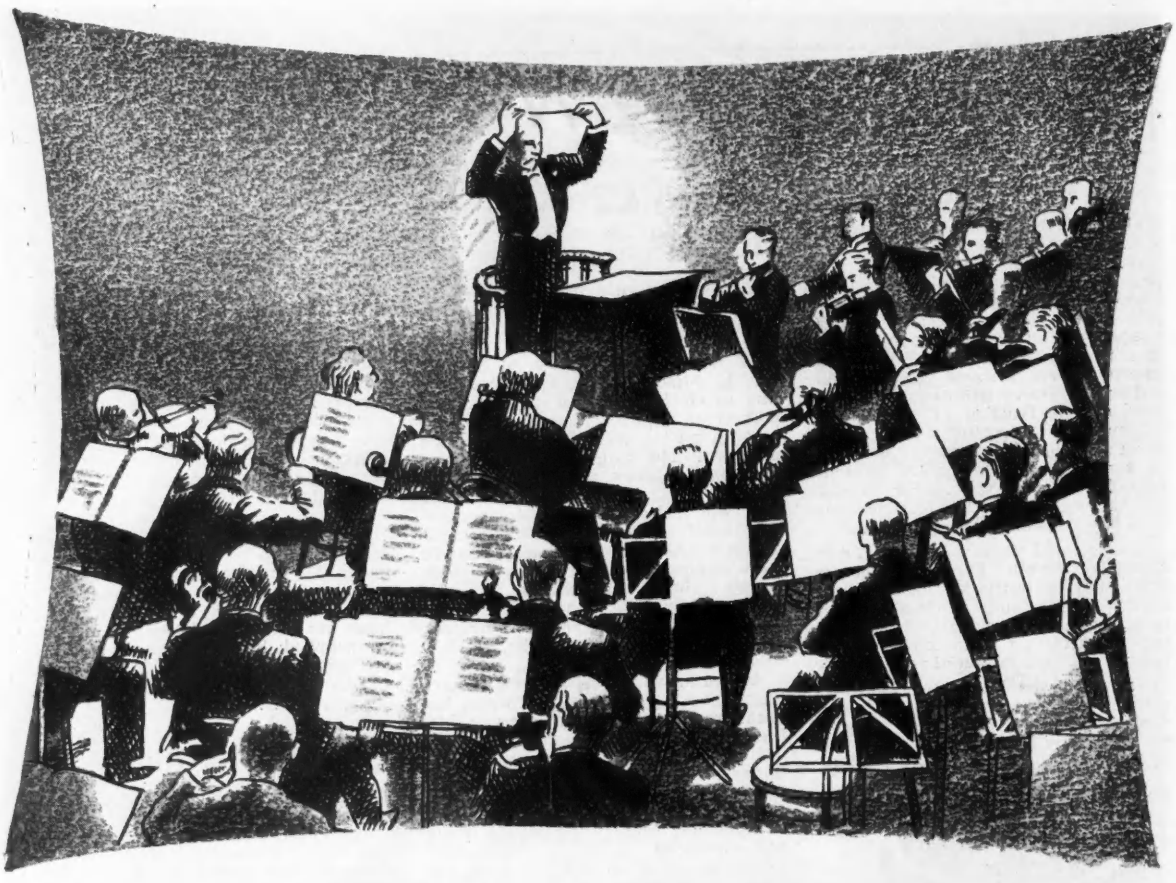
The griller incorporates two pairs of high-speed grill frets, one pair to each of two cast iron burners which are sited at the top and are easily removable for cleaning. The burners are connected at the outside back of the grill to a common cast-iron feed supply to which is fitted, optionally at right or left hand side, a ⅜ in. gas control tap. The 'Main' GG225 is supplied complete with tinned wire mesh brander with cool type handles. The short counter stand comprises a cast iron, black enamelled plate with four short and interchangeable legs; the high stand has cast iron black enamelled top and base plates with corner standards in stoved metallic finish, and cast iron black enamelled shelf.

Dimensions: Overall size, 19½ in. wide by 14 in. deep by 11¼ in. high; two-tier model, 22¼ in. high; toasting area, 15 in. wide by 8½ in. deep; gas connection, ⅜ in.; gas consumption, 20,000 B.Th.U. per hour; gas pressure, 25/10ths—no governor supplied; height of counter stand, 4 in.; height of high stand, 36 in.—*R. & A. Main, Ltd., 48, Grosvenor Gardens, London, S.W.1.*

De La Rue

THOMAS DE LA RUE, LTD. have published a catalogue containing concise and comprehensive details of the wide range of their Potterton gas-fired boilers for central heating and hot water supply. The ratings in B.Th.U. per hour have been determined by tests, the radiation figures listed being inclusive of radiator and pipe surfaces determined from the accepted transmission of 160 B.Th.U. per sq. ft. average of heating surface. Included in the data section are details of the thermostatic controls and safety devices supplied with the boilers. This useful technical booklet runs to over 60 pages.

Avenue Coke Ovens

CHESTERFIELD is developing rapidly as one of the country's leading coal carbonisation centres. Preparatory work on the National Coal Board's much - discussed £8 mill. project on the Avenue site at Wingerworth, is proceeding at great speed, and the mammoth plant is expected to be ready by 1955. Meanwhile, extensions to the Grassmoor and Hardwick plants, estimated to be costing £1 mill., are nearing completion. When the new plant at Grassmoor comes into operation towards the end of this month it will be capable of producing 5½ mill. cu.ft. of gas daily for sale to the East Midlands Gas Board. The Hardwick extensions are expected to come into operation early next year. The two plants are playing an important part in the East Midlands Gas Board's scheme to link up the various mains into a grid. At the moment the Grassmoor and Hardwick plants are supplying town gas for the Chesterfield, Mansfield, Shirebrook, and Sutton-in-Ashfield districts.

UNDER CONTROL

As the last note dies away, there is an outburst of applause — applause first for the conductor, for the way in which he welded the musicians into one entity by his MASTERLY CONTROL. Peebles Governors gain appreciation for those same qualities — precise, positive and CONSTANT control, quick response, meticulous accuracy. Peebles are BEST for Governors.

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Client: A Steelworks in South Wales.
Job: Obsolete Steelworks Plant to be dismantled to make way for essential development.
Location: S. Wales.
Urgency: EXTREME
Instructions received: A.M. on Friday, 1st August, 1952
Progress of work: Dismantling gang travelled to S. Wales Friday night. Work continued without break throughout BANK HOLIDAY week-end. Job progressing according to plan.

THE 600 GROUP OF COMPANIES

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And at 600 Commercial Road, E.14; Bidder Street, Canning Town, E.16; Belfast; Birmingham; Leeds; Manchester; Luton; Morriston, Swansea; Hebburn-on-Tyne; Sheffield; Bath

GJ/528/DDIS

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Sell to those best suited to deal with them.

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DENSE · DURABLE · HIGH STRENGTH
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THE NEW A&M OPTIONAL METER

We confidently present our latest coin meter available for pennies and shillings, sixpences and shillings, or half-crowns and shillings and readily adjustable for single coin operation at the gas engineer's option.

The mechanism embodies the fruits of many years' research, every part is precision made to close limits, range-plates are interchangeable - absolutely - one meter with another.

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NEW GRANGE WORKS, EDINBURGH

Also at
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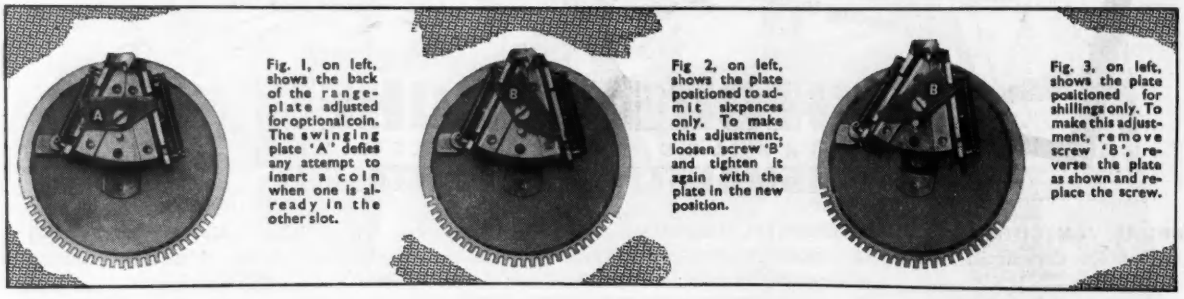

Fig. 1, on left, shows the back of the range-plate adjusted for optional coin. The swinging plate 'A' defies any attempt to insert a coin when one is already in the other slot.

Fig 2, on left, shows the plate positioned to admit sixpences only. To make this adjustment, loosen screw 'B' and tighten it again with the plate in the new position.

Fig. 3, on left, shows the plate positioned for shillings only. To make this adjustment, remove screw 'B', reverse the plate as shown and replace the screw.

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PUBLISHERS' NOTICE

The "Gas Journal" is published every Wednesday, price 1/3d.; by post 1/5d.

Subscription Rates: Home and Empire :- 52/- per annum; Foreign :- 60/- per annum. (Both payable in advance.) A copy of the "Gas Journal" Calendar & Directory is presented each year to continuous subscribers.

Classified Advertisements: All small classified advertisements are charged at 1/9 per line (approx. 7 words) - minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received 14 days prior to publication if proofs are required. Type area of inside pages 10" deep x 7" wide; block screen 120.

BUSINESS MANAGER: S. T. CULLEN

MIDLANDS OFFICE: 10, Union Street, Birmingham.

NORTHERN MANAGER: W. Q. Foster, 33, St. Helens Road, Harrogate. 'Phone: Harrogate 84291.

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APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

GAS INDUSTRY—Well-known firm of Gas Appliance Manufacturers in the Midlands requires the services of a SENIOR TECHNICIAN to design and develop solid fuel appliances. Only qualified men need apply. Please reply with full details of experience, etc., to No. 121, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

REQUIRED by Integrated Iron and Steel Works, Fuel Engineering Department: TECHNICAL ASSISTANTS with knowledge and experience of gas distribution, holders, mains, boosters, furnaces, plant tests, etc: Reply giving details of education, experience and salary required to The General Manager (Iron and Steel Works), Stewarts and Lloyds, Limited, Corby, Northamptonshire.

A TECHNICAL SALES REPRESENTATIVE is required for the Gasworks Plant Department of Newton Chambers & Co., Ltd., Sheffield. Applicants should be between 30 and 45 years of age and should have suitable qualifications in Gas Engineering. Experience in design and/or manufacture in the gas industry or with a contractor essential. In addition to a salary there is an efficiency bonus with travelling expenses and the use of a car. The post is superannuated. Reply to the Personnel Officer, Newton Chambers & Co., Ltd., Thorncliffe, nr. Sheffield, stating details of age, qualifications, experience and salary required.

AN ESTABLISHED FIRM of Space Heating Manufacturers invite applications for the position of SENIOR SALES AND TECHNICAL REPRESENTATIVE for the North Western, North Eastern and Northern Gas Boards. The position carries a high basic salary, commission and full expenses, with age limits of between 35 and 40. Applicants must be capable of conducting negotiations at the highest levels. Replies, which must provide full details and qualifications, will be treated as strictly confidential. Apply: No. 123, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

WALES GAS BOARD

MILFORD HAVEN AND NEYLAND UNDERTAKING

APPLICATIONS are invited for the position of Working Distribution Foreman to the above Undertaking.

The post is Graded A.P.T. V(B) *i.e.*, £430/£510 per annum and a two-bedroom "pre-fab." bungalow is available at an inclusive rent of 18s. 2d. per week.

A form of application for the post may be obtained from Mr. John H. Daniels, Engineer & Manager, Milford Haven & Neyland Gas Undertaking, Town Hall, Milford Haven, Pembs., not later than October 6, 1952.

AN ESTABLISHED FIRM of Space Heating Manufacturers invite applications for the position of SENIOR SALES AND TECHNICAL REPRESENTATIVE for the Southern, South Western and Wales Gas Boards. The position carries a high basic salary, commission and full expenses, with age limits of between 35 and 40. Applicants must be capable of conducting negotiations at the highest levels. Replies, which must provide full details and qualifications, will be treated as strictly confidential. Apply: No. 124, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

NORTH WESTERN GAS BOARD

SOUTH LANCASHIRE GROUP

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APPLICATIONS are invited for the above position at a salary within Grade A.P.T. XI (£670-£795 per annum).

Applicants must possess suitable technical qualifications and have had sound experience and training in the chemical control of large Gas Works.

The successful candidate may be required to pass a medical examination and to subscribe to such superannuation scheme as the Board may adopt.

Detailed applications, giving the names of two referees' should reach the General Manager, North Western Gas Board (South Lancashire Group), Radiant House, Cotham Street, St. Helens, within fourteen days.

SOUTH WESTERN GAS BOARD

CHELTENHAM SUB-DIVISION

CHELTENHAM UNIT

SHIFT FOREMAN

APPLICATIONS are invited for the position of SHIFT FOREMAN.

Candidates should preferably have had experience of gas manufacture in W.D. Continuous Vertical Retorts, Horizontal Retorts, and modern C.W. Gas plants, and should be fully conversant with Gasworks Ancillary plant. Experience in the control of labour is essential.

The commencing salary will be within the range of Grade V of the National Salary Scales, £430-£510.

The successful applicant may be required to pass a medical examination.

Applications, stating age, present position, training and experience, together with the names of two referees, should be addressed to the undersigned not later than September 27, 1952.

A. L. MORRIS,
Manager.

Cheltenham Sub-Division,
South Western Gas Board,
North Street,
Cheltenham.

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ENGINEER-MANAGER of a small works in New Zealand desires change to other British owned undertaking overseas (not in British Isles). Age 26, married, keen, energetic and fully experienced in coal gas and C.W.G. manufacture and design and maintenance of works.

Apply No. 122, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

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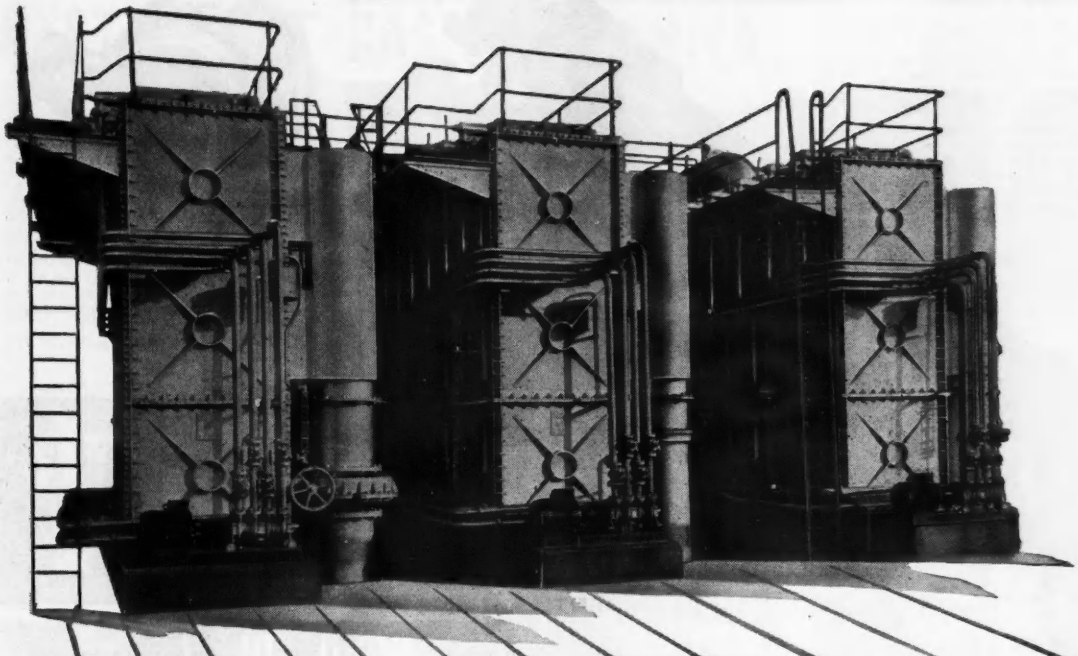

A BATTERY OF MULTIFILM WASHERS

for Ammonia, capacity 15 million cu. ft. per day

installed at the Garston Works, Liverpool, for the North Western Gas Board. Other units at Garston include, Vacuum Benzol Recovery and Desulphurising Plant, Naphthalene Washing Plant, three Holmes-Connersville Meters, and three Holmes-Connersville Exhausters.

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"Fishtail" type burner *with two-armed stamped pattern injector for heating liquid in tanks by submerged horizontal combustion tubes. For use with low pressure gas supplies.*
Size Range: *1", 1¼", 1½", 2" and 2½" outlets.*
Capacity Range: *45-280 cu. ft. of gas per hour.*

Note.—These four burner heads are for high pressure gas or low pressure gas and air blast.

Brass non-blow-off head types: *deal with 5 to 10 cu. ft. of gas per hour.*

Stainless steel, "F" type head, burner: *deals with 8 cu. ft. of gas per hour.*

Perforated head type burner: *deals with 10 or 15 cu. ft. of gas per hour.*

Type 2 Mixture Controller, *for controlling quality of air/gas mixture irrespective of varying pressures and resistances. Temperature control is varied by manipulation of the air cock only.*
Capacity Range: *from 130 to 1380 cu. ft. of gas per hour according to air pressure (¼ lb. to 1lb.) and size. For low pressure gas systems.*
Air Inlets: *1", 1¼", 1½" and 2" diameters gas thread.*

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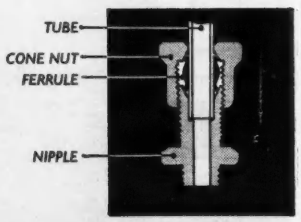
KEITH BLACKMAN have been making compression joints for many years and the present design embodies features developed as a result of this long experience. Notice that the shape of the ferrule is such that the joint is made without unduly stressing the tube.



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510/2/GJ

This wall through-drilled — in 3 minutes!

The astonishing cutting-power of Durium Drills is well demonstrated by this test on Fletton brick in our laboratory. Brick hardness and working conditions vary too widely to generalize about drilling times, but this test does emphasize the fact that masonry drilling is vastly more speedy with Durium Drills than by any other method.

The Durium tips, are harder than any steel or alloy, being made of a new specially tough carbide tungsten almost as hard as a diamond. *Look for the name 'Durium' on the shank*—no other is a genuine Durium Drill. Durium Drills prevent 'break-away' at the back of hollow materials and can be used with great success even in a hand-drill or brace.

Write for details of Durium Drills and the Rawlplug R.P.I. Electric Drill, the ideal power tool for them. And if you have a fixing problem, tell us about it. Our Technical Service Dept. will be delighted to help you.

Durium-tipped—that's the point!

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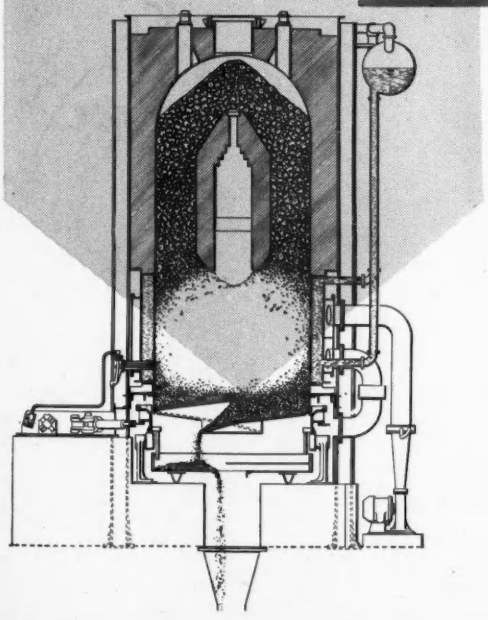

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